THE BUILDER

a Journal for the ARCHITECT & CONSTRUCTOR

VOL. CLVIII JANUARY 12 1940 No. 5058

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THE BUILDER LIMITED

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PETER'S FARM, CHIPPENHAM.
THE LATE SIR GUY DAWBER, R.A., ARCHITECT.

HAD this house risen starkly out of level ground, it would still have been charming, but the terraced treatment, made possible by a sloping site, has added greatly to its interest and homeliness. Such a site always involves problems of damp-proofing as, in places, the earth against the outer walls is higher than the floor level and—unless the soil is of an unusually porous nature—surface water flows from the higher ground, thus finding its way into the excavations. There has been no trouble with dampness at Peter's Farm because, wherever the floors are below ground level, the cement concrete under those floors, and the cement mortar renderings that form vertical dampcourses to the outer walls, have been made completely impervious by the addition of 'PUDLO' Brand waterproofer. Specifications that leave no doubt of what is necessary to secure immunity from dampness may be had free for the asking.

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THE BUILDER

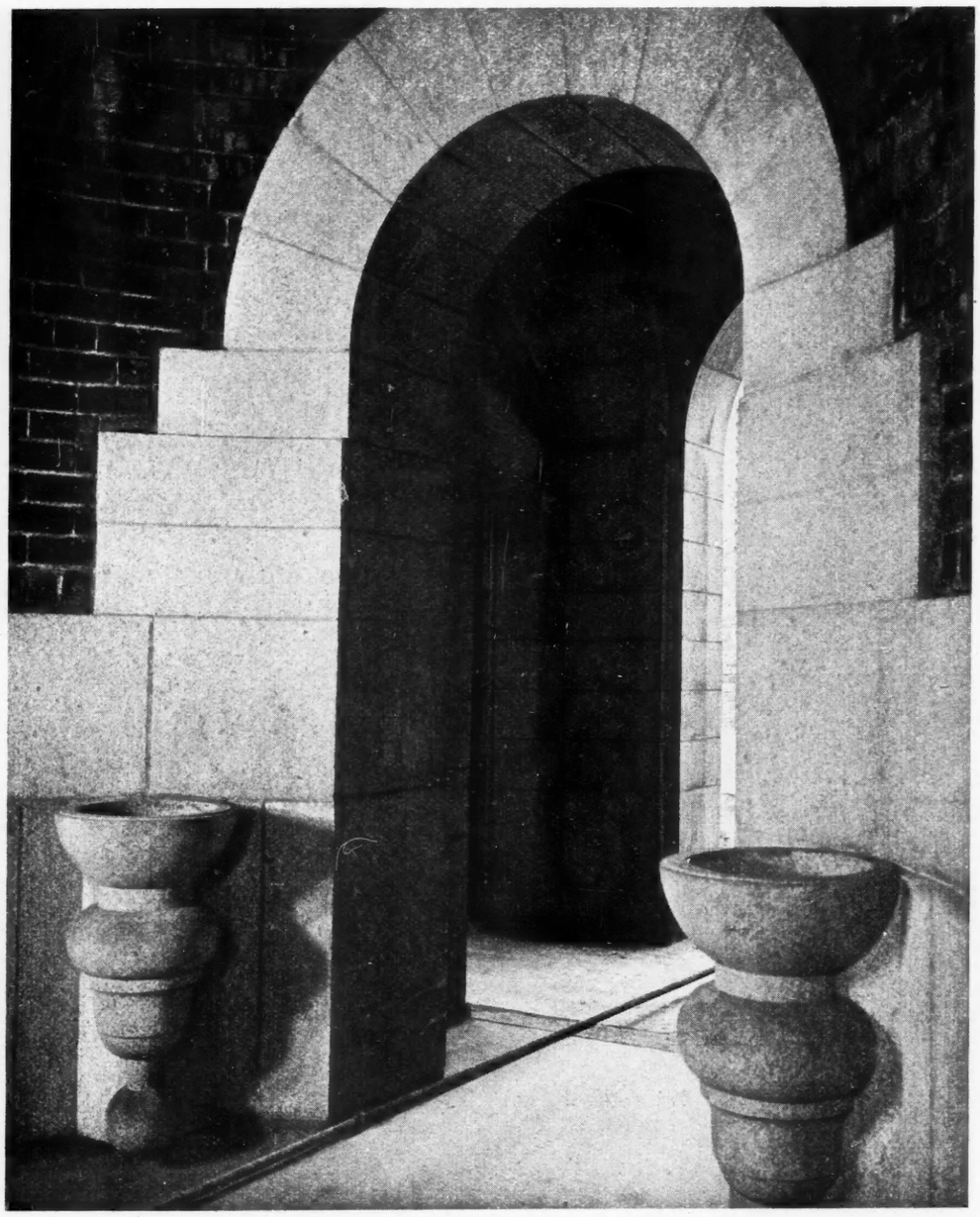
INCORPORATING

"ARCHITECTURE" AND "THE BRITISH ARCHITECT"

VOL. CLVIII JANUARY 12 1940 No. 5058

HORSLEY'S GREEN (No. 2) CAMP.

As stated elsewhere in this issue, the Government's programme of National evacuation camps is expected to be complete within the next ten weeks. For reasons of cost, the programme of forty-five camps originally proposed for England and Wales will now be reduced to thirty-one. Our photograph shows a view of the dining-hall block with tuck-shop at Horsley's Green Camp (No. 2), which was fully illustrated in our issue for October 13 last. Built by Messrs. M. J. Gleeson, Ltd., this camp has been designed by MR. T. S. TAIT, F.R.I.B.A.



THE CRYPT CHAPEL, LIVERPOOL METROPOLITAN CATHEDRAL.

The construction of Liverpool Metropolitan Cathedral, it was decided at the outbreak of war, will be continued as long as possible ; so far, work has gone on steadily. Our photograph shows one of the doors on the east side of the Crypt Chapel of Our Lady of Dolours, leading on the right to the great spiral stairway and, on the left, to the lift or to the lower sacristy. This detail exhibits the general material features planned by Sir Edwin Lutyens, P.R.A., for the whole crypt—massive Cornish granite in combination with blue bricks. On page 30 will be found some further progress notes.

BUILDING AND THE WAR

The prosecution of the war must be the Government's first concern ; but we trust that this necessary preoccupation may not distract attention from the condition of the Building Industry or prevent a realisation of the help it can give towards winning the war—and after.

Here are some of the relevant facts :—

Civil building has virtually stopped, the total value of such work being estimated at £200,000,000.

Unemployment in the Building, Contracting and associated industries is well over 300,000, an increase of about 100,000 since September, 1939.

This increase has occurred in spite of the acceleration of some work in progress, the placing of new Government contracts and A.R.P. work.

It results in unproductive expenditure in unemployment pay at the rate of £18 millions a year and a total national loss of about £30 millions, from the lack of earning power of such unemployed and the loss of assets they would have created.

There is no shortage of materials, except timber, which has been very wastefully used for Government work.

If substitutes for timber (already existing or capable of being quickly produced in this country) are used, the release of part of the timber now withheld will enable civil building—much of it of an urgent character—to be resumed on a considerable scale.

The architectural and other professional sections of the Industry are seriously affected by the almost complete cessation of, or preparation for, civil work.

Since their work must mostly be done before building operations can begin, every day of professional inactivity is a day's delay in the recovery of the Building Industry.

The broad facts are that a considerable amount of urgent civil building work is waiting to be done and that labour and materials are available. The carrying out of this work cannot hinder the prosecution of the war but must inevitably assist in that direction by relieving the country of a large part of its burden of unemployment and by providing new sources of revenue of a lasting character.

The remedy is in the hands of the Government. We suggest that it is in the national interest to lift the ban on new works involving the expenditure of public money and the related ban on new issues.

Nor is this all. The time has come for a planned economy in building and contracting—the two industries that increasingly provide the motive power of industrial expansion, upon which the country must largely rely for the winning of the war.

Mr. Stanley Hall, President of the Royal Institute of British Architects, has suggested the creation of a Ministry of Building "as an effective means of safeguarding the country's greatest peace-time industry" ; Sir Alfred Hurst, Chairman of the London Builders' Conference, urges "the centralisation under one strong authority—Minister or Controller—of all Government dealings with the Building Industry, making full use of the expert knowledge which every section of it is anxious to place at the disposal of the Government."

Great demands will be made upon the Building Industry in the future. It is mere prudence to place it on a sound footing now, not merely to meet the emergency of war, but in preparation for the developments which must come after.

We have invited a number of representative leaders in the professional, industrial and other spheres to give us the benefit of their views on these urgent matters. A selection of letters will be found on pages 31, 32.

A re-established and fully occupied Building Industry must be an added source of strength to the country in its pursuit of Peace. May 1940 see the realisation of both aims !

NOTES AND NEWS

The R.I.B.A. 1939 Standard Contract: Revision of Form.

THE revision of the R.I.B.A. 1939 Standard Form of Contract to make it applicable to contracts entered into during the period of the war has now been completed by the Joint Contracts Tribunal, and the revised Form has just been published. Corresponding revisions are being made in the Form specially adapted for use by local authorities, and this will be available shortly.

Liverpool Metropolitan Cathedral: Recent Progress.

THE Archbishop (the Most Rev. Richard Downey, D.D.) and the Building Committee of Liverpool Metropolitan Cathedral have decided to continue building operations as long as possible. Several workmen have been called up for military service; prices have advanced slightly; and income has been somewhat affected by general conditions, but, so far, work has gone on steadily. On page 28 is a photograph of one of the doors on the east side of the Crypt Chapel of Our Lady of Dolours. To right and left of the doorway are circular moulded holy water stoups (worked by hand on the site), both part of the constructional granite. It will be noticed that the floor is yet to be laid.

The Crypt is nearing completion, *i.e.*, an area roughly 300 ft. by 200 ft., is built upon to a height of 30 ft. In particular, the Chapel of Our Lady of Dolours on the south side, and the corresponding Chapel of the Crucifixion on the north side, are built, and each will seat about 500 people; as also the first section of the Chapel of Relics (with its now famous rolling gate), the greater part of the Crypt corridor, (265 ft. by 27 ft.), and the high- and low-tension rooms. The more conspicuous incomplete sections are the organ well (45 ft. deep by 32 ft. in diameter), the lower Sacristy (170 ft. by 27 ft.), which now awaits its groined vaulted roof, and the two great stairways at the north-east and south-east corners.

Above the Crypt will rise the Sanctuary, Choir, Chapter House, main Sacristy; the Chapels of the Blessed Sacrament and of Our Lady; the Archbishop's Sacristy, and that for lay servers; and adequate foundation preparations for all these are well in hand. It is of interest to note that the high-tension room and the Crucifixion Chapel are now available as air-raid shelters, the former for the cathedral offices, and the latter for the public of the district. The building has been designed by Sir Edwin Lutyens, P.R.A.

Civil Building: An A.A.S.T.A. Public Meeting.

THE A.A.S.T.A. has decided to hold a public meeting at 6.30 p.m. on Tuesday, January 23, in the Oak Room, Kingsway Hall, Kingsway, W.C.1. To ensure a fruitful discussion, personal invitations are being sent to many well-known architects, and it is especially hoped that members of private offices, whether large or small, will attend. A statement as a basis for discussion has been prepared, copies of which may be obtained from the Association.

The Soane Medallion, 1939-40: The Award.

SIXTY-FIVE candidates took part in the Preliminary Competition for the Soane Medallion, and 21 were admitted to the Final Competition. The subject set for the competition was "Courts of Justice for a large City," and eleven sets of drawings were submitted in the Final Competition.

The Soane Medallion and, subject to the specified conditions being fulfilled, £150, have been awarded to Mr. Eric G. Broughton, A.R.I.B.A., of the Royal College of Art and the Polytechnic, Regent-street, London.

Excavations at Atchana, North Syria.

SIR LEONARD WOOLLEY, D.Litt., Hon. A.R.I.B.A., will lecture to the Royal Institution of Great Britain on January 19 on "Latest Excavations at Atchana in North Syria." The lecture, which begins at 5 o'clock, is to be given at 21, Albemarle-street, W.1.

Building Unemployment.

AT December 11, 155,536 insured operatives in the building industry were unemployed, a number equal to 15.1 per cent. of the total insured for Great Britain at July, 1938. This is 11,556 worse than for November last, but 31,484 better than for December, 1938.

Emergency Shop Fronts and Hoardings.

ONE of the problems created by the black-out is how to make temporary fronts noticeable and attractive. Interesting suggestions to this end are to be found in the Exhibition of Designs for the Decoration of Emergency Shop-fronts and Hoardings which, promoted jointly by the National Register of Industrial Art Designers and the Society of Mural Painters, was opened at the Building Centre by Sir Kenneth Clark, C.M.G., on Monday.

The designs in this exhibition are attractive, bright and colourful, as they should be under the present depressing conditions. In addition, the majority of the designs aim to express the character of a shop's commodities. It would have been an advantage if the type of shop-front had been shown as a surround to each design.

Generally, the designers may be said to be highly successful in their efforts. Well carried out, the designs would prove an attraction in themselves and would certainly brighten the streets. The cost would be small compared with a normal lighting charge.

Among the most noticeable designs are the following: Hoarding for a tobacco shop and others, by Professor Ernest Stern; Soho Wine Shop, by Kate Adamson; John Line Wallpapers and the Trocadero, by E. M. Dinkel. Florists, with a cut figure (the only one), by Avril Corbould Pott, clearly denotes its purpose. Panels for the decoration of the Phœnix Theatre, by H. Bird, possess great decorative character. From the photographs available we illustrate a design from the Bath Art School, which is in a spirit appropriate at the moment. Many other able and attractive designs may be seen. Shopkeepers should be made aware of the exhibition; it is obviously to their benefit. It remains open until January 27.

Professional Announcements.

MR. W. H. ANSELL, F.R.I.B.A., has taken into partnership Mr. Arthur Bailey, A.R.I.B.A. The firm will be known as Messrs. W. H. Ansell and Arthur Bailey, 12, Gray's Inn-square, W.C.1.

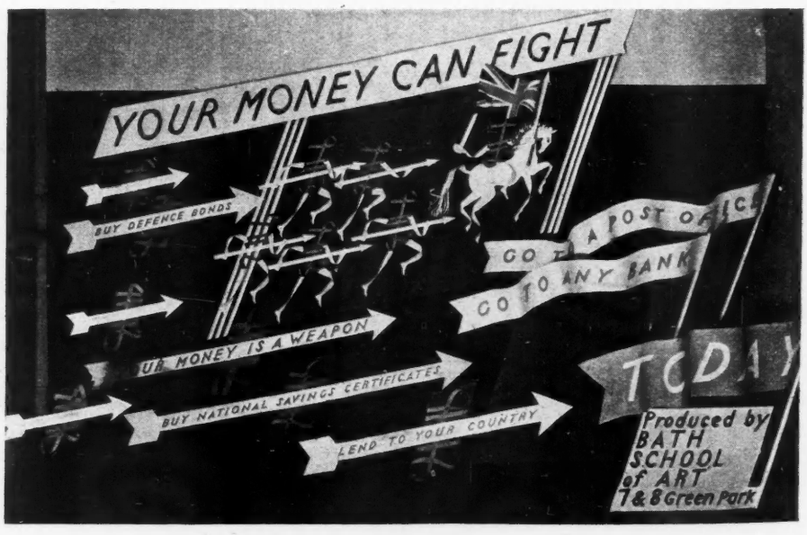
MR. J. N. AYLWIN, A.R.I.B.A., has been called up for military service, and is closing his office at 7, Park-lane, W.1, as from January 31 next, for the duration of the war, during which period his practice will remain in abeyance.

IN 1915.

EXTRACT FROM *The Builder*, JANUARY 8.

Helping the Building Trade.

WE wish that in the desire of the Government to help the building trade they would remember that only by placing work in the hands of outside architects can they help professional men, since much work which would normally go on is at a standstill; and we have called attention to the mistake made in increasing the size of official staffs to cope with exceptional circumstances, since experience proves that such staffs are seldom reduced after the period of pressure is at an end.


YOUR MONEY CAN FIGHT
BUY DEFENCE BONDS
GO TO A POST OFFICE
GO TO ANY BANK
UR MONEY IS A WEAPON
BUY NATIONAL SAVINGS CERTIFICATES
LEND TO YOUR COUNTRY
TODAY
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A WINDOW DISPLAY IN PREMISES AT BATH, TEMPORARILY LOANED TO THE LOCAL NATIONAL SAVINGS COMMITTEE. (See this page.)

BUILDING AND THE WAR

Our Leading Article on "Building and the War," printed on page 29, has been shown to a number of leaders in various branches of the Building Industry and Allied Trades. A selection of the letters received is printed below.

From the President of the Royal Institute of British Architects.

To the Editor of *The Builder*.

SIR,—I endorse every word of your leader on the subject of Building and the War, as my letter to *The Times* of December 29 will show. All branches of the building industry are affected—architects, surveyors, engineers, contractors, merchants and operatives; and the public is vitally concerned, because this industry is responsible for the livelihood of 2½ millions of citizens. Since early September we have pressed for an estimate—however approximate—of Government requirements in men and materials to carry out war works. If there is a surplus, then it is of vital importance that the surplus should be employed.

MR. E. STANLEY HALL.

So far as Government work is concerned, there is no doubt that they have not in the past made adequate use of professional assistance. I am glad to see in *The Times* of January 5 that it is stated as part of the Government's policy that "contracts on the basis of cost plus percentage for profit are no longer placed for building works unless the circumstances are so exceptional that the Departments cannot prepare the plans, specifications and quantities necessary for tenders." The only excuse for a cost plus percentage contract is that of saving time; but even for contracts of this nature it is necessary to have adequate working drawings prepared in advance of—and not simultaneously with—the erection of the buildings. Forethought in employing professional men and their assistants both in public and private offices means economy in the long run. It is largely because the Departments have not employed adequate professional assistance in the past that this undesirable method of cost plus percentage has become inevitable. It is good news to see that the Government realises this.

The same article states that "Work on the Government programme is being spread over all districts in the United Kingdom, and—taking contracts of over £100,000—is being carried out by about 100 firms of main contractors." There are anything from 1,000 to 1,500 firms of contractors capable of taking on jobs of this size, and there are parts of England where building work is stagnant and yet where there is skilled labour and material lying idle. There are some 15,000 firms of builders up and down the country with skilled staffs, and it would be a national loss if these firms were allowed to die out.

66, Portland Place, W.1. E. STANLEY HALL.

From the President of the Building Industries' National Council.

To the Editor of *The Builder*.

SIR,—I welcome the assistance your leading article renders in spreading the knowledge within the industry of the rapidly increasing decline in building activity, and, in consequence, of the urgent need for collective action to be taken on behalf of the whole industry.

It must not be forgotten in this respect that the remedy rests, to some extent at least, with the industry itself. It is inherent in the measure of support which the industry renders to the concerted efforts made in its name. My Council, by the submission of considered and authoritative reports, has kept H.M. Government informed as to the economic dangers of the present position, and of the repercussions most likely to arise unless effective remedial action is taken. At the same time my Council has outlined the part the industry, effectively organised, can take both in the framing and in the application of remedial measures.

MR. H. J. C. JOHNSTON.

It is, perhaps, as well to emphasise that the industry itself has an important contribution to make to the alleviation of the stressful position in which it now finds itself. While being keenly watchful of developments concerning both its own and the nation's well-being, it must itself pay increasing regard to the need, in its own direct interest, to strengthen the representative powers of its organisations and units.

Any help which your journal can render along these constructive lines is in the direct interest of both the building group of industries and the national economic welfare.

H. J. C. JOHNSTON.

85, Gloucester-place, W.1.

From the Chairman of the London Builders' Conference.

To the Editor of *The Builder*.

SIR,—The building industry is at a turning-point in its long history. Adversity has brought a recognition by all sections of their essential community of interest, well expressed in the words of Mr. Stanley Hall: "There is hardly a problem of any magnitude affecting the industry which is not one of common concern."

Are we going to let this new-found sense of unity peter out in a little burst of publicity, a conference or two, a promise of a little more co-ordination between Departments, a little wider spreading of Government war contracts, or is this great oppor-

tunity going to be used to mobilise the vast strength of a combined industry, to make plans for its future and to use that strength to carry those plans through ?

The machinery for this purpose is already in being in the Building Industries' National Council, with immense potentialities for good, but it has hitherto been starved of motive power in the shape of personal and financial support. In its last, the sixth, year of working, the funds placed at its disposal by the whole group of building industries for promoting building activity in the country amounted to £2,370—this for a group with a total turnover running into hundreds of millions and an annual expenditure on *competitive* publicity said to approximate to £2 millions !

SIR ALFRED HURST, K.B.E.

The first essential is clearly to make adequate use of this machinery. The second is to have a definite idea of what we are working for. Is it the whole trouble that Government Departments during the War have squandered our timber resources, given all their work to a few firms and generally brought the industry to a sorry pass, or is this merely symptomatic of something far deeper and more lasting, *viz.*, the whole attitude of the State to the industry ? Have we already forgotten the drastic curtailment of public building in 1931-32 and the other ups and downs in Government building policy since the Great War ? Do we expect a more far-sighted policy to develop naturally amid the clamour for economy after this war is over ?

My recent letter to *The Times* dealt with this fundamental question and I will not repeat my argument. I would merely add that it will need a great effort and a sustained effort by the whole industry to subordinate the traditional "customer" attitude of Departments towards the industry to an over-riding Government care for its welfare, but without that change I am convinced that Departmental conferences, co-ordinating committees, advisory panels and even war-time controllers will be of little avail.

ALFRED HURST.

Shell-Mex House, W.C.1.

From the High Sheriff of Bedfordshire.

To the Editor of *The Builder*.

SIR,—The almost complete stoppage of any national industry—together with the unemployment to which it necessarily gives rise—is a direct heading towards vast national economic loss.

Building is essentially a utility industry, and one of first importance. The enormous stocks of building material held idle in this country—material utilisable for practically no other industry—calls for realisation *now* as potential national wealth and national well-being.

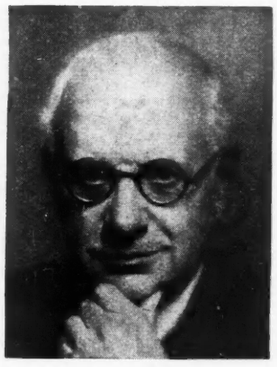
The mobilisation of the resources of the industry now—as opposed to its stagnation—would ensure a safe, sure, sane and steady insurance and provision against, otherwise, a day of grave deficiency when dwelling houses and utility buildings will be the most urgent need (slow of realisation) of the nation. May I Bowdlerise a maxim : "Peace hath its needs not less than war."

F. W. CROSSLEY-HOLLAND,
J.P., M.A., M.D., D.Sc., D.C.L.,
Barrister-at-Law, High Sheriff of Bedfordshire.

From the President of the Chartered Surveyors' Institution.

To the Editor of *The Builder*.

SIR,—The present depression in the building industry is due, in part at least, to the same causes as produced the depression in 1931—32. At that time of financial stringency the Government of the day definitely discouraged local authorities from undertaking building works. It was left to the industry itself to point out the unwisdom of this course and the serious effect which the policy would have on the economic life of the community. As a result of the action taken at that time, the Building Industries National Council was founded, and to-day this organisation can claim to speak for the industry as a whole.



MR. OSWALD HEALING.

The demands made upon the building trade and its allied professions by the rearmament programme have been met with considerable success, but these demands have not completely absorbed all the resources of the industry. Labour and material are both available, and the indefinite postponement of necessary works, partly of maintenance and partly of new construction, is causing immediate hardship and will only accentuate the problems of post-war settlement.

The remedies for this state of affairs may be briefly summarised thus :—First, a definite statement of policy by the Government with regard to the position of the industry on work other than that demanded by the war is urgently required. Those within the industry can hardly plan for the future unless the Government give the indication desired. If the industry is to make its maximum productive effort to build up the national income out of which the war is to be financed, then there should be removal of those prohibitions, direct and indirect, including the restrictions on loans and capital issues which are hampering its full development at the present time.

Second, some scheme of insurance should be devised to protect builders and building owners from the risk of damage from enemy action. If the uncertainty which prevails on the question of compensation for air raid damage to fixed property could be removed or modified, then one of the chief difficulties retarding the resumption of civil building would be removed.

OSWALD HEALING.

21, Queen Anne's Gate, S.W.1.

[Further letters will be printed in our next issue.—ED.]

RICHELIEU

By MARTIN S. BRIGGS, F.R.I.B.A.

ALMOST in the middle of France, halfway between Calais and Biarritz, there lies a little town seldom visited by tourists, but unique as an example of seventeenth-century town planning. A few architects have made their way thither and recorded their impressions. Some 30 years ago one of them who is now famous, but who was then a mere student, published some excellent measured drawings of the principal buildings, but the anonymous accompanying article and town plan contained many inaccuracies and misstatements, *e.g.*, that none of the town walls now remain.

The town of Richelieu was laid out by the famous Cardinal of that name between 1631 and 1638 as an appendage to the huge palace or château which he had built in the adjoining park, and was intended primarily to house the enormous suite of officials and courtiers who were attached to him. Even to-day, it preserves its original appearance to a remarkable degree, but when John Evelyn, the diarist, visited it in 1644 it was almost new, and his impressions enable us to picture it in its prime. Evelyn was only 24 years of age when he wrote his description of it, but he had already developed the habit of close and critical observation which makes his diary so valuable to all students of seventeenth-century art. Here is his impression:—

"We arriv'd at the Towne, and went to see the Cardinal's Palace neare it. The Towne is in a low marshy ground, having a small river cut by hand, very even and straite, capable of bringing up a small vessell. It consists of onely one considerable streete, the houses on both sides as indeed throughout the towne built exactly uniforme, after a modern handsome designe. It has a large goodly Market-house and Place, opposite to which is the Church built of freestone, having two pyramids of stone, which stand hollow from the towers. The Church is well built, of a well-ordered architecture, handsomely pav'd and adorn'd. To this towne belongs an Academy, where, besides the exercise of the horse, armes, dauncing, etc., all the sciences are taught in the vulgar French by Professors stipendiated by the great Cardinal, who by this, the cheape living there, and divers priviledges, not only design'd the improvement of the vulgar language, but to draw people and strangers to the towne; but since the Cardinal's death it is thinly inhabited, standing so much out of the way and in a place not well situated for health or pleasure. He was allured to build by the name of the place, and an old house there belonging to his ancestors. This pretty town is handsomely wall'd about and moated, with a kind of slight fortification, two faire gates and draw-bridges. Before the gate towards the Palace is a spacious circle, where the Faire is annually kept. About a flite-shot from the towne is the Cardinal's house, a princely pile, tho' on an old designe, not altogether Gotiq, but mix'd, inviron'd by a clear moate. The roomes are stately, most richly furnish'd with tissue, damask, aras and velvet, pictures, statues, vases and all sorts of antiquities, especially the Cæsars in oriental alabaster. The long gallery is paynted with the famous acts of the Founder; the roofe with the life of Julius Cæsar; at the end of it is a Cupola or singing theatre, supported by very stately pillars of black marble. The Chapell anciently belonging to the family of the Founder. The Court is very ample. The Gardens without are very large, and the parterres of excellent imbrodry, set with many statues of brasse and marble; the groves, meadows, and walkes are a real paradise."

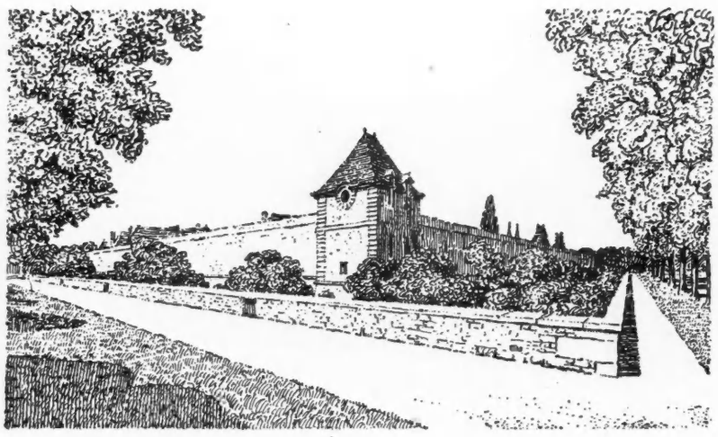
From the huge collection of Cardinal Richelieu's letters, published in eight large volumes, it is possible to trace the inception of this grandiose scheme. It was in 1620, when he was 35 years of age and already rich as well as famous, that he decided to erect, on the site of the small and dilapidated mediæval château which he had inherited from his ancestors, a great palace suitable for the entertainment of the King and a vast suite. In that year he instructed his architect, Jacques Lemercier, to prepare plans not only of the palace itself but also of a town where he could accommodate the surplus of his own huge following. Richelieu was a marshy little place with no natural advantages of site, but he determined from the outset to make it so attractive that people would settle there with some guarantee that civilised amenities would be available. To remedy the disadvantages of the site, he canalised the little river Mable which meandered past the château, and this made it serve the moats surrounding both château and town. The Cardinal was determined to make his property the premier centre of the district, and proceeded to buy up adjoining estates so that he could dispossess their inhabitants, and he thus formed the Duchy of Richelieu. Soon 2,000 men or more were at work.

RICHELIEU: THE GRANDE RUE.

In 15 years the palace was finished, and the town, begun in 1631, was partially occupied. In 1638, according to La Fontaine, who visited it in 1663, the walls, church, law-court, college and most of the houses were completed, but the number of inhabitants was still small. Yet every inducement had been offered to prospective settlers. In 1631 the King authorised two markets a week and four fairs a year. The citizens were excused all taxes until 100 houses had been built, and thereafter were granted a special remission. Sites were granted free on condition that the freeholders built their houses according to Lemercier's standard design and that the work was completed within a stipulated period. The 28 large houses in the Grande Rue, all built to a stereotyped pattern, were allotted to the principal officers of the Cardinal's own retinue. Authorities who have studied the problem consider that the maximum population of the town in the seventeenth century, before it began to decline, must have been between 5,000 and 6,000; it is now under 1,600.

One of the amenities was an Academy, founded by royal command in 1640. Here the Cardinal wished to introduce a new idea in education, in which the French language was to be the vehicle of all the teaching. It was to be a national rather than a local institution, of University rank, providing higher education for the sons of the nobility. But as he died only two years after the King had authorised the scheme, the Academy never really found its feet, became an ordinary provincial college, gradually, languished, and expired towards the end of the eighteenth century. Throughout the building of palace and town, the Cardinal took the keenest interest in all the details of the enterprise. Writing in 1631 to the Archbishop of Bordeaux, who acted as his factotum for both schemes, he said: "One of the greatest pleasures you can give me is to expedite the progress of our new town." In the following year he wrote: "Young Bouthillier has offered to build a house in the town of Richelieu. Tell Desroches to remind him that he must do it forthwith. I should not have troubled him with this, but seeing that Bouthillier has made the offer himself, I want to make him put the work in hand soon."

A letter in 1633 contains this passage: "I am glad that the town is progressing. . . . I will try to find builders, but it will not be easy. If Cytois cannot build, I do not wish him to be pressed to do so, but somebody must be found to take his place; besides, the setting-out has been badly done." As for his wonderful palace, the Cardinal's voluminous correspondence



RICHELIEU : N.W. ANGLE OF THE TOWN, SHOWING WALL AND MOAT.

contains many allusions to this early counterpart of Versailles, intended to be the finest and most sumptuously appointed house in all France.

The present state of the town and château is illustrated in the sketch-plan reproduced here, drawn by the author from Lemercier's plan, revised on the spot, and supplemented by stepped measurements. It is not accurate to a yard, but the general scale is sufficiently near for the purpose of this article. The actual lay-out remains almost unaltered, strictly rectangular, with the Grande Rue running north and south from the Porte de Chinon to the Porte de Chatellerault, both still existing. The Grande Rue is interrupted by the Place du Marché and the Place des Réligieuses, as originally planned; and is crossed by transverse streets running east and west, one of them terminating in the Porte de Loudon. The whole town, measuring some 600 yards by 400, is surrounded by stone walls, a moat some 70 ft. wide and originally about 10 ft. deep—now mostly filled up—and outside the moat on three sides a large part of the enclosing avenues remains. The width of the Grande Rue is about 37 ft., of the subsidiary streets about 20 ft. or less. There is a picturesque hemicycle at each of the north and south entrances of the town.

Of the public buildings, the parish church and the market hall survive unaltered, and both are illustrated here. The former is typical of its time, with a finely planned Baroque interior but no particular features of interest otherwise. The adjoining presbytery has been rebuilt. The market hall, which stands opposite the church in the spacious tree-girdled market place, is a magnificent example of carpentry, and measures about 150 ft. by 50 ft., the central "nave" being about 28 ft. wide. The main posts are 15 in. by 12 in. On market days, the market-place is crowded with stalls, vehicles, rustic folk and cattle, and Richelieu wakes up from its habitual slumber.

But more interesting than either of these buildings is the double range of large private houses which line the Grande Rue from end to end. These houses were, and most of them still are, identical in both internal and external design. The unit of design is the *toise*, equivalent to about 6 ft., the assumed height of a man. The two *places* are each 50 *toises* square, and the Grande Rue is 6 *toises* wide, while the height of the houses lining it is 5 *toises* to the bold continuous cornice, above which rises a steep slated roof with dormers. But the roof ridges are not continuous, each house being treated as a pavilion. The walls are of brick with fine limestone dressings, but stucco now covers all the brickwork. The frontage of each house to the Grande Rue is about 70 ft., and the depth of the principal block about 30 ft. Behind this block is a courtyard about 35 ft. wide and 50 ft. deep, approached from the street by a passage 8 ft. wide, with massive and boldly panelled doors beneath an elliptical arch. Beyond the courtyard, which is flanked and terminated by subsidiary buildings, is a passage leading to a spacious garden surrounded by walls 9 ft. high.

When La Fontaine visited Richelieu in 1663 he described it in unflattering verses :—

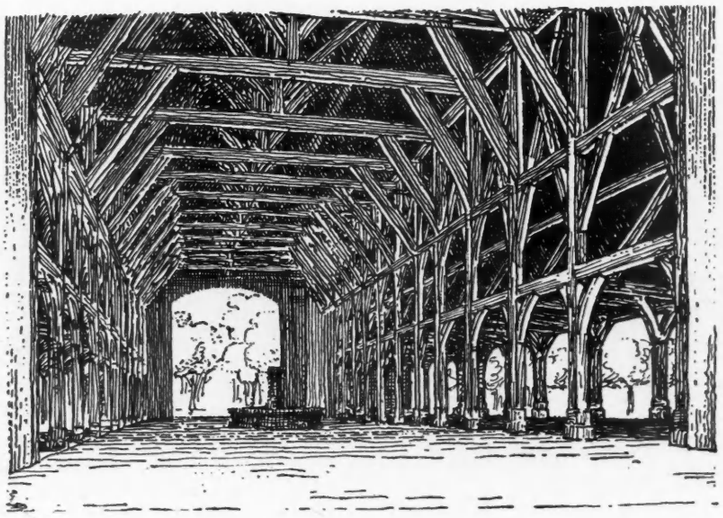
" Enfin, elle est, à mon avis,
Mal située et bien bâtie;
On en a fait tous les logis
D'une pareille symétrie.

Ce sont des bâtiments fort hauts;
Leur aspect vous plairait sans faute :
Les dedans ont quelques défauts;
Le plus grand, c'est qu'ils manquent d'hôte.

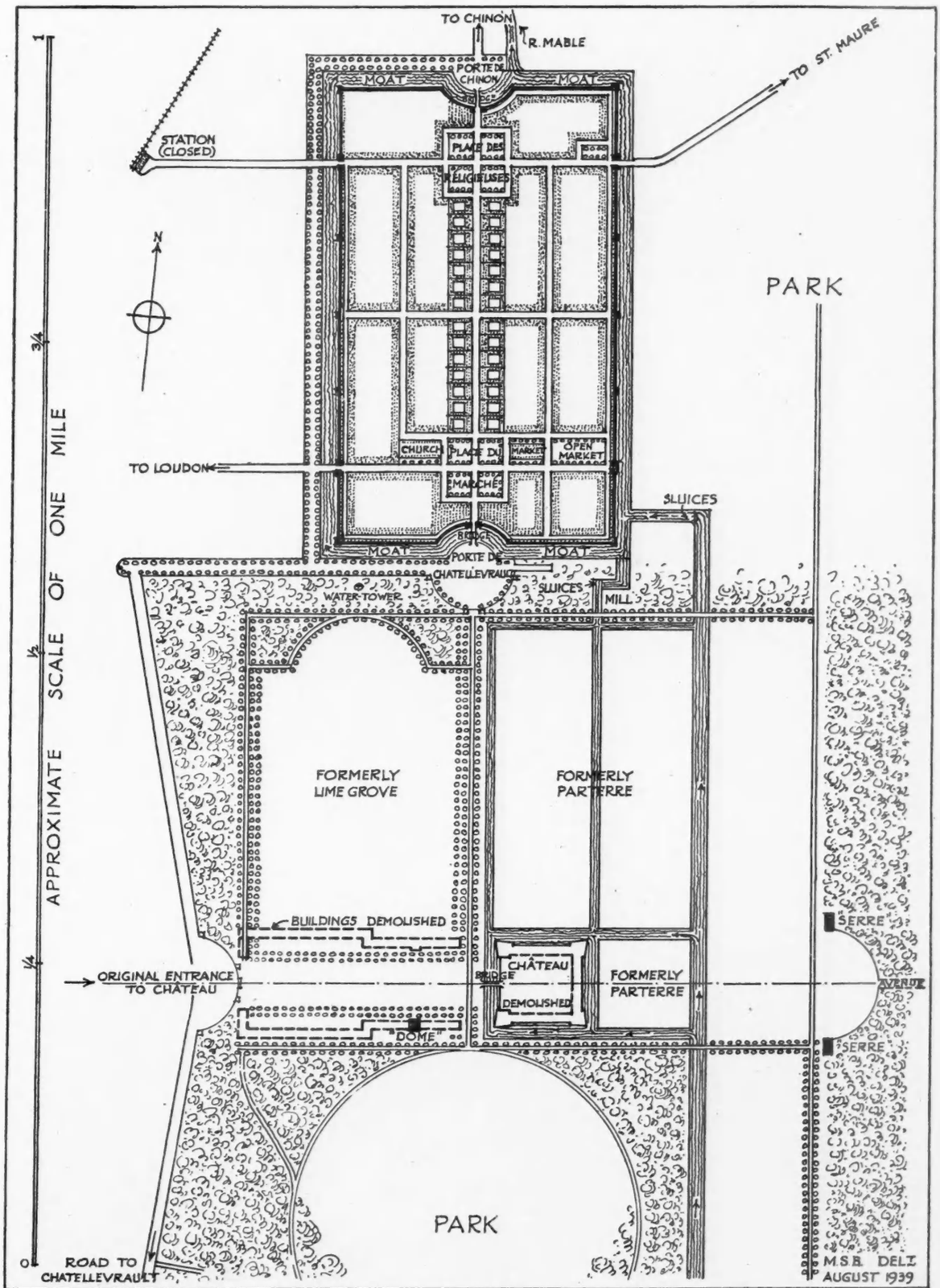
La plupart sont inhabités;
Je ne vis personne en la rue;
Il m'en déplut; j'aime aux cités
Un peu de bruit et de cohue."

The wonderful château which lay to the south of the town (see plan) has almost completely disappeared, and is now represented by a single pavilion ("The Dôme") of one of the forecourts, and the two buildings known as *serres* at the east end of the whole group. These buildings seem to have had some connection with vines or wine, as they bear the sculptured head of Bacchus, and are finely vaulted in stone. The foundations of the château proper, however, still remain, surrounded by a moat. The park of the château still has an area of some 500 hectares (about two square miles), and is finely wooded. In 1930 it was presented to the University of Paris by the Duc de Richelieu, a descendant of the Cardinal, who thereby commemorated his great ancestor's work for the Sorbonne in Paris. It is open to the public, and is a pleasant place to linger in. The lay-out, sufficiently indicated in my sketch plan, is magnificent, and may be compared with its original state, well illustrated in one of Perelle's engravings. The hemicycles at the western and eastern ends, the "Dôme," and the two *serres* are the only features of this vast scheme surviving to-day.

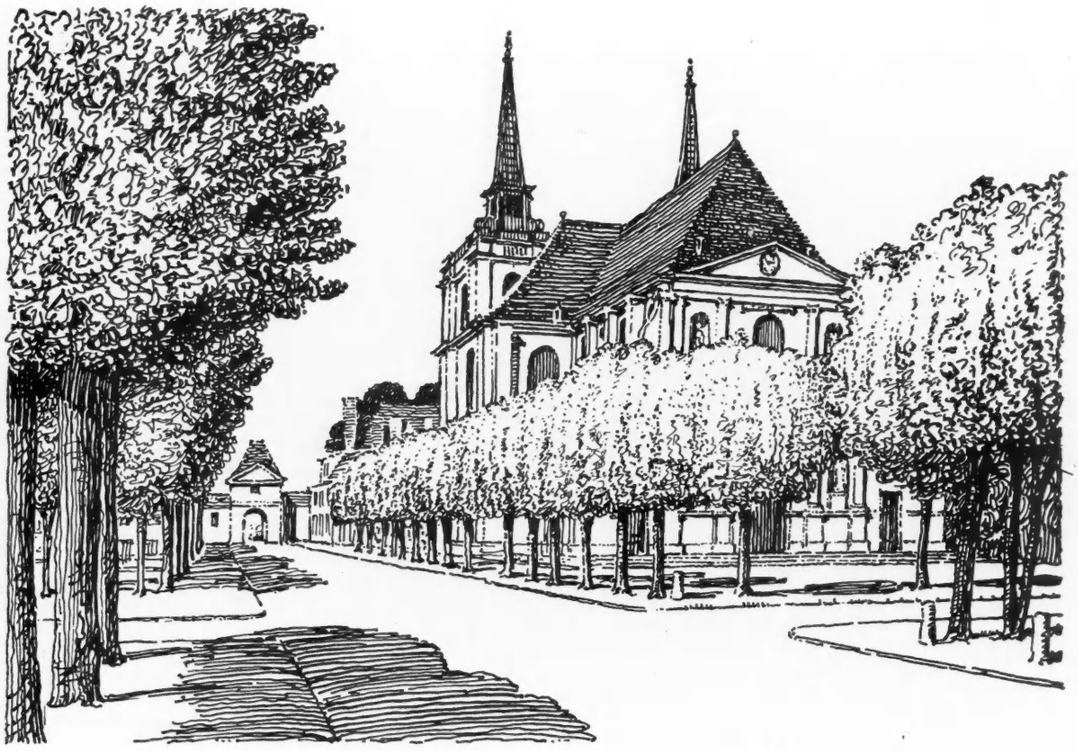
Besides Lemercier, the architect, a host of artists were employed to embellish this lordly home. Over the entrance was a bronze figure of Fame by Guillaume Berthelot. The royal suite on the first floor overlooking the garden contained elaborate panelling, carving and pictures by Mantegna, Perugino and Poussin. The gallery was adorned with 20 paintings representing the victories of Louis XIII compared with the conquests of the Greeks and Romans. Freminet painted the dome of the *salon*. Altogether, the house contained 100 full-length statues and over 100 busts, nearly all antiques. The Cardinal employed a host of agents to scour the Continent for treasures of art, but seems to have been somewhat inexact in his payments, often appropriating anything that took his fancy. Such is the habit of dictators! Two letters written to his henchman the Archbishop of Bordeaux in 1632 show his close interest in the details of decoration. One contains this passage : "The pictures which I see in the various places I visit make me wish mine to be as fine. In conclusion, I beg you to ensure that the room over the entrance shall be very richly painted from a good design."



RICHELIEU : INTERIOR OF THE MARKET.



SKETCH-PLAN · OF · THE · TOWN · AND · CHÂTEAU OF RICHELIEU

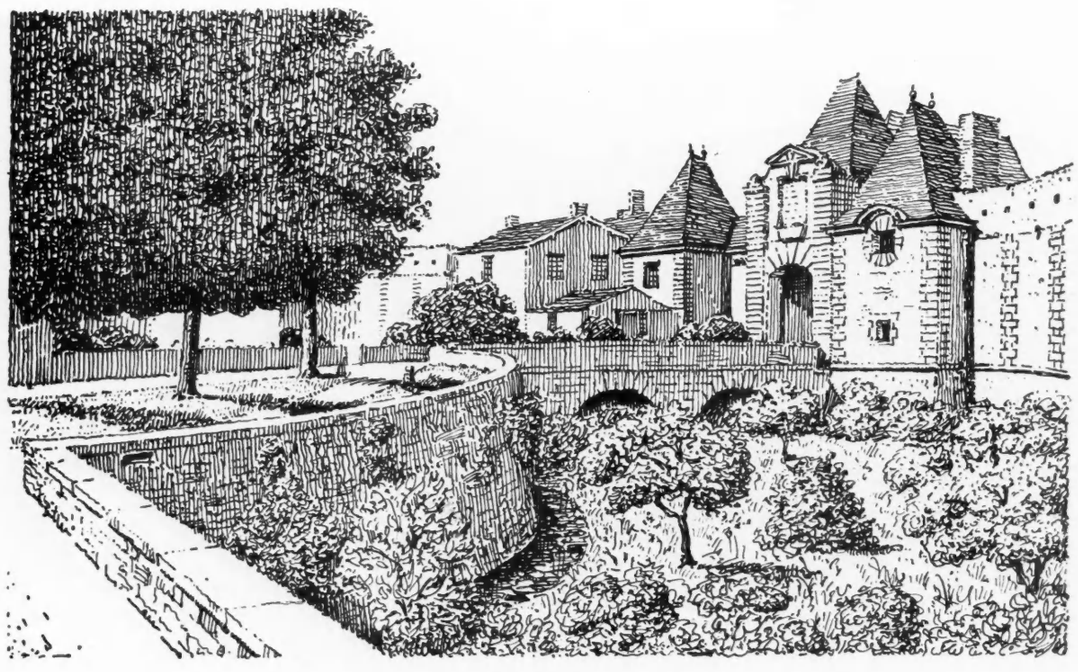


RICHELIEU : THE MARKET PLACE (ON RIGHT, THE PARISH CHURCH ; IN BACKGROUND, THE PORTE DE LOUDON).

(Then follow 27 lines of instructions.) The second letter, written a few weeks later, deals exhaustively with questions of construction as well as decoration, and shows that some part of the ancient château had been incorporated in the fabric of the new one.

Richelieu never lived to entertain royalty, as he had hoped and intended, in his great palace. Its treasures began to be dispersed as early as 1727, but its fate was sealed in 1792, and since that date even the huge buildings have disappeared one by one, till now their site is almost entirely covered by greensward and gardens.

In conclusion, no visitor to Richelieu should fail to see the marvellous chapel at Champigny-sur-Veude, less than three miles away. It is a gem of late Gothic mingled with early Renaissance detail, and is a relic of the once noble château demolished by Cardinal Richelieu to enhance the lustre of his own.



RICHELIEU : ENTRANCE TO THE TOWN BY THE PORTE DE CHINON.

WAR-TIME BUILDING PRACTICE

By R. Cotterell Butler, A.R.I.B.A.

7.—THE DEVELOPMENT OF MATERIALS AND CONSTRUCTIONAL SYSTEMS AS SUBSTITUTES FOR TIMBER—III.

PRACTICAL DETAILS IN CONNECTION WITH FOUNDATION AND WALL DESIGN IN "MASS CONSTRUCTION" MATERIALS.

IN general practice, mass construction is usually understood to refer to those constructional systems based upon the application of weight-bearing walls, and frame-and-panel structures may be considered outside this category. However, when considering the problem of the design of light, semi-permanent structures for emergency building developments—although, by the use of large preformed wall-units carrying little if any loading other than their own weight, the structural system may from an academic point of view be considered a frame-and-panel one —the technique of construction, and the materials employed, may with advantage be those used for mass construction in normal building practice.

The general approach to this question, and the factors governing the application of mass-construction materials to the design of light structures, have been dealt with in broad principle already.* It is here proposed to outline the practical detailing of materials already widely developed in general building practice.

The advantages of constructional systems employing a maximum of preformed material cannot be stressed too highly, and while—particularly for emergency building—*in situ* work should be minimised as much as possible, yet the use of constructional methods introduced purely to take advantage of available materials may in certain instances be a wise undertaking.

The selection of materials—and hence appropriate constructional systems—must under war-time conditions be governed not only by the theoretical efficiency of the system under consideration, but by the wider criteria of war-time conditions generally. The present officially admitted shortage of building timber, expected at the outset of the war, and undoubtedly accelerated by the wholesale use of timber for any and every official building undertaking, demands the use of materials less likely to be affected by the international situation, and while there does not appear to be any real shortage of steel, at least at this stage, owing to its uses in other war-time undertakings than building, it must be admitted that the use of non-timber and non-steel building systems would develop a mode of building technique which would be far less likely to be influenced by conditions arising out of the progress of the war.

The use of *completely* non-timber and non-steel constructional systems is not in general a practicable proposition, mass-construction materials being without any considerable tensional strength unless reinforced; but by reducing the amount of steel and timber as much as possible, there can be little doubt that the supply would be equal to the demand.

In practice, it may be found that timber may be almost entirely eliminated, and steel limited to tensional reinforcement and lathing only. In the examples illustrated in this article, these limitations have been accepted.

The course of the war may quite possibly introduce a complete shortage of building timber, but it is unlikely that steel supplies could be affected to a similar extent. It is interesting, however, to speculate upon other resources of tensional reinforcement should such a situation develop, for instance, the use of fibres produced from timber of non-building quality, or of other organic fibrous material (suitably treated with a sodium silicate solution) as tensional reinforcement in light concrete slabs designed for flooring or roofing purposes.

The following illustrations are not intended to do more than indicate the line which may be taken to adapt materials commonly employed in normal building practice to the requirements of a war-time building programme. Many of the examples taken are not applicable to a high degree of site-prefabrication, and their inclusion has been upon other grounds.

Neither the factor of cost nor that of precisely calculated insulation properties has been fully taken into account here; for this omission no apology is made, as this essential work cannot be undertaken without the co-operation of the war economist and all the scientific facilities available to the Government. This work must be done, however—and without delay—or war-time building practice will remain the wasteful adaptation of peace-time technique that it is at the moment.

FOUNDATIONS AND FLOORS.

Considerable departures from the type of foundation required for normal building practice may be made where emergency building is to be considered. Owing to the need for economy, wall and other loading may be expected to be a minimum, emergency structures not only consisting of rarely more than one storey, but often being constructed of materials having the lowest possible density. Again, in general practice it is frequently necessary to design abnormally extensive foundations to compensate for unsatisfactory soil characteristics, but in war-time practice this is unlikely to be the case; sufficient latitude being usual in order to select a suitable site, or the low loading of the foundations making deficiencies of soil of no importance.

Two general types of foundation system may be expected, and selection will depend more on the characteristics of the site in question than upon the nature of the superstructure to be supported.

* See previous articles in this series. A list is on page 40.

1. PIER-AND-BEAM FOUNDATIONS.

(*a*) REINFORCED BRICKWORK.—The large stocks of brick which it is believed are present in this country at the moment, the wide availability of suitable labour, and the expectation that the production of bricks may continue to be possible upon a large scale, afford ample reason for the use of the not yet widely accepted technique of reinforced brickwork.

In practice this technique follows closely the lines of reinforced concrete design, the main differences being those introduced by the use of preformed units of standard size, and thus a considerable reduction in the need for shuttering, and on the other hand a similar reduction in the flexibility of dimension.

The reinforced brickwork pier foundation, illustrated in Diagram (1), Sheet 1, may be taken as being broadly typical for the type of span to be expected for light temporary structures. For the purpose of completing the diagram, a 4½-in. wall has been shown above the supporting beam, and although it may be expected that where the case for brickwork—as opposed to concrete—merits a brickwork foundation, brickwork for partition wall units will also be reasonable; any type of preformed or built *in situ* wall may of course be used.

Again, a timber floor has been illustrated here, but this may as easily be formed of reinforced concrete flooring slabs (hollow or otherwise), steel floor decks, or even reinforced brickwork, although, in this last instance, this is unlikely to be a practicable proposition in comparison with other alternatives.

(*b*) REINFORCED CONCRETE.—Little need be said in connection with the design of pier foundations in this material, this type of system being common practice long before the war. The high degree of prefabrication which may be employed is without doubt an advantage, almost the whole structure being formed of precast units grouted together.

The piers or stools may be cast *in situ*, and formed of mass concrete un-reinforced, but the use of a precast stool on a thin seating of cast *in situ* material may offer considerable advantage.

A wide variety of actual types of precast concrete units may be employed—variations in interlock, position of reinforcement, and arrangement of grouts being possible. A number of proprietary designs are available, but whether proprietary or otherwise, it should be of the highest efficiency. The use of a material having a great flexibility of form and strength and at the same time well understood in theory, offers no excuse for a low efficiency ratio.

2. RAFT FOUNDATIONS: CONTINUOUS FOUNDATIONS.

(*a*) BRICKWORK.—The continuous brickwork foundation is usually that of an un-reinforced beam, with a continuous distribution of structure-to-soil loading, rather than that of a raft, and the example illustrated in Diagram (3), Sheet 1, is of this type. A continuous slab type—in character very like that of the concrete one illustrated—may however be used, provided adequate reinforcement is employed to distribute the loading from the walls over the whole floor area. In the type illustrated, the walls themselves bear upon small brickwork footings independent of the main raft, and less reinforcement is therefore necessary. Where spans are of some size the saving in brickwork effected by separating the walls from the floor is considerable. Where the subsoil is extremely sound, the floor slab may be entirely un-reinforced, the bricks being simply bedded down upon a level layer of well-rammed hardcore.

(*b*) REINFORCED CONCRETE.—Although it may occasionally be desirable to separate the wall support from the floor, the high efficiency of a continuous slab foundation, even when only lightly reinforced, will normally enable it to distribute satisfactorily the light loads transmitted from the walls. The example illustrated, Diagram (4), Sheet 1, is of the continuous type, and the necessary reinforcement may be obtained by light expanded metal.

Should the subsoil be particularly good, and the wall loads light, savings in reinforcement may be effected by a beam foundation to the walls and a simple concrete oversite as floor. Unless reinforcement is extremely scarce, however, this system should not be adopted where it means considerable excavation to obtain a firm bed for the wall beam, otherwise this added excavation will more than offset the small amount of reinforcement required to spread the load. Spread over the whole raft, provided sufficient homogeneity is obtained throughout, the total soil loading per unit area for a building of the emergency type will be very small indeed.

3. PIER-AND-SLAB FOUNDATIONS.

Where soil conditions demand the pier type of foundation rather than the raft, beams supporting the walls may be arranged at ground level, and instead of carrying the floor upon these it may be supported direct upon the earth surface. A saving in tensional reinforcement may be effected by these means, but the problem of damp-proofing may be made difficult. Also where the ground surface is uneven, or sloping, excavation or stepping foundations may be avoided by raising the floor well above the ground level.

As has already been pointed out, the selection of a suitable type of foundation depends primarily upon site conditions, rather than upon the character of the superstructure or of the material available, as both these latter may more easily be modified to yield the highest overall efficiency.

DAMP-PROOFING.

Few difficulties arise in the selection of means of insulating walls and floors from the penetration of damp from below. Where large surfaces are in contact with the earth, an integral form of waterproofing will often be found a simple solution, although the use of a screed damp-course, or of one form of flexible layer or another may provide an equally efficient solution. In this question there can be no hard and fast rule, economics and general availability usually being the governing factors.

Where pier foundations are used, considerable savings in material for damp-coursing are effected, all that is required (provided that the floor surface

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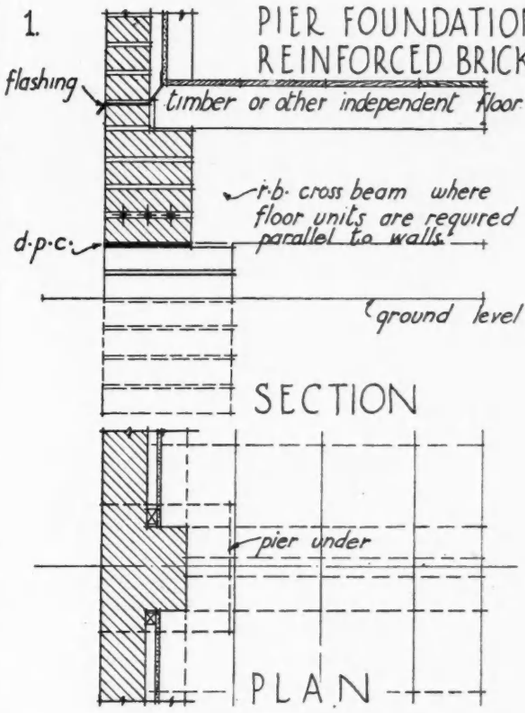
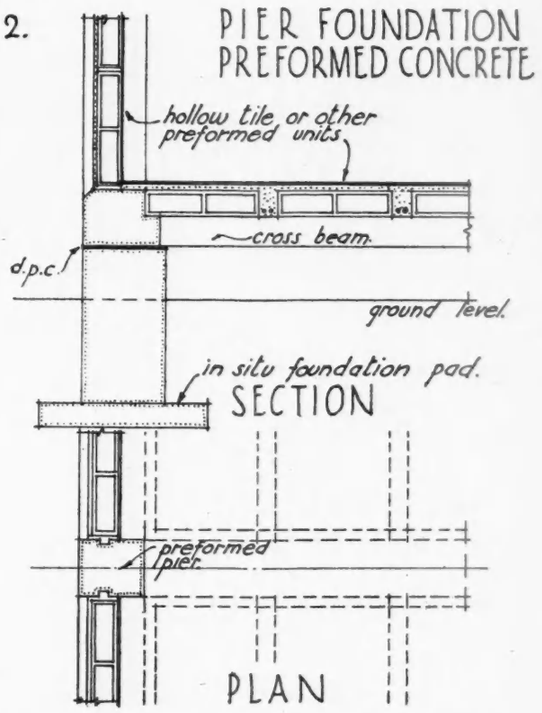
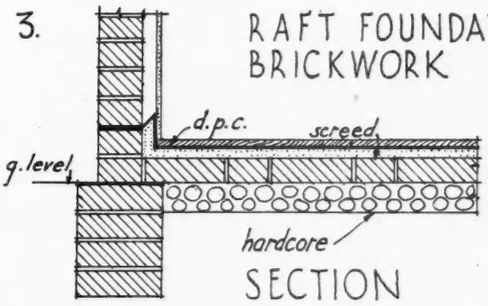


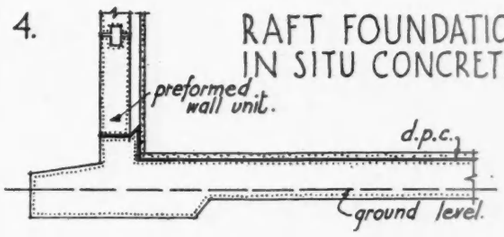
2. PIER FOUNDATION PREFORMED CONCRETE



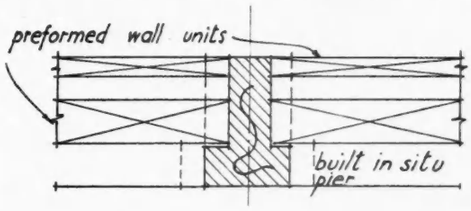
3. RAFT FOUNDATION BRICKWORK



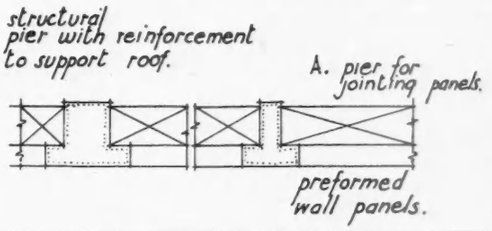
4. RAFT FOUNDATION IN SITU CONCRETE



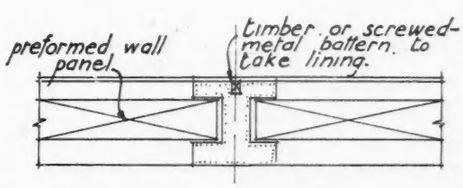
5. IN SITU BRICKWORK PIER



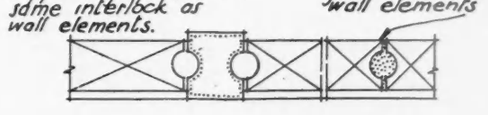
6. PREFORMED CONCRETE PIER



7. PRECAST CONCRETE PIER



8 SUPPORTING PIER.



FOUNDATION DETAILS. PIER TYPES FOR USE WITH PREFORMED WALL UNITS.

W-T-B-P-7. SHEET-1.

is sufficiently above ground level) being a small insulating pad or layer between the pier and the wall beam above.

WALLS.

The design of a suitable form of wall construction is a matter of balancing a very large number of factors against each other, and the results which may be obtained are almost as unlimited in variety of detail as they are restricted in principle.

In principle, the wall selected should have the highest possible overall economic efficiency (taking into account the re-orientation of economic factors produced by national war-time control), together with a high degree of resistance to weather and thermal transmission. The factors which must be taken into account should include the following :

The availability of the materials required. National—Other essential war-time undertakings ; Local—Transport facilities.

Cost of material—Estimated amortisation of structure.

The availability of the necessary labour.

The overall efficiency of the fabrication system.

The Efficiency/Cost ratio for weather resistance and thermal insulation.

The production-time factor—(National war requirements).

The durability factor, *e.g.*, possible peace-time uses of the structure.

Maintenance costs—(Estimated war period).

No attempt has been made to arrange these in any order of relative importance.

GENERAL STRUCTURE, JOINTING.

Aspects of structural design and applicable systems of fabrication in connection with emergency structures have already been dealt with, the only aspect requiring further note at this stage being the question of jointing.

Where site-prefabrication is adopted to any considerable extent, the efficiency of the preformed units produced under site-factory conditions would be high, and to obtain the full benefit of this, the jointing method applied should be most carefully worked out.

Diagrams (5) to (8) inclusive, Sheet 1, indicate simple but efficient means of effecting sound joints between a wide variety of preformed wall units.

(5) Light brickwork pier with horizontal and vertical reinforcement. This will be built *in situ* in most cases. If it is desired to avoid the necessity for reinforcement, the size of the pier may be increased, and bonding introduced.

(6) Precast reinforced concrete piers, for jointing only (*a*), and for use as structural supports (*b*). Minimum type, suitable for single layer wall units.

(7) Precast concrete piers, of double-cover type, providing a high degree of joint efficiency, but only suitable for use with accurately formed wall units. An internal batten cast into the pier provides a fixing for linings. This may be external if required, or a double cavity wall may be used. Useful where a high degree of thermal insulation is demanded.

(8) Supporting pier, for use where the wall unit is designed to interlock at the joints, without the use of secondary vertical jointing piers.

WALL SYSTEMS.

The diagrams on Sheet 2, page 41, are intended to indicate some of the many arrangements of materials which may be employed for light walls having reasonable insulating properties, and considerable weather resistance ; while at the same time avoiding the use of timber almost entirely, and restricting the use of steel to reinforcement.

These examples cannot be said to be based upon any extensive investigation of the present operation of official control of materials, nor upon exhaustive laboratory tests of thermal insulation. The arrangements are based purely upon empirical standards, and should serve only to indicate lines for further research.

The following materials have been employed in one or other of the arrangements illustrated, or may be suitable in similar types of wall unit :—

$4\frac{1}{2}$ in. BRICKWORK.

$2\frac{5}{8}$ in. BRICKWORK. (Brick on edge.)

" PARTITION BLOCK MATERIAL.*" (2 in. and upwards.)

SOLID CONCRETE BLOCKS. (3 in. and upwards.)

HOLLOW CONCRETE BLOCKS. (Proprietary and otherwise.)

PLASTER ON EXPANDED-METAL LATHING.

CEMENT-LIME RENDERING.

CEMENT-LIME RENDERING OR PLASTER ON SCRIM, HESSIAN, OR OTHER FABRIC.

SLURRY FINISHES.

SKIM-COAT PLASTER.

HUNG TILES.

WATERPROOFING LIQUIDS FOR RENDERINGS, AND SLURRIES.

WATERPROOF BUILDING PAPERS.

FLEXIBLE DAMP-COURSE MATERIALS.

The design of roof systems for emergency building to effect a maximum saving of steel or timber introduces factors of an entirely different type from those governing the design of foundations and floors. Unless domes or arches were a practicable proposition, with the exception of the use of reinforced concrete, the problem is outside the scope of " mass-construction " materials.

It is hoped in a later article of this series to devote the whole space available to an examination of roofing problems in emergency building generally.

*** This term is to be taken to include all low density preformed materials normally used for internal wall construction, e.g., pumice, breeze, wood pulp, slag and asbestos aggregates ; hollow-clay and aerated mixes generally, etc.**

(To be continued.)

Previous articles in this series were :—

October 13—" The Field of Activity."

November 3.—" Billeting Accommodation — General Planning and Layout."

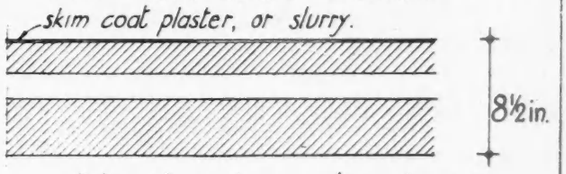
November 10.—" Billeting Accommodation—Structural Requirements, Design and Structural Systems."

November 17.—" Billeting Accommodation—Equipment and Fittings."

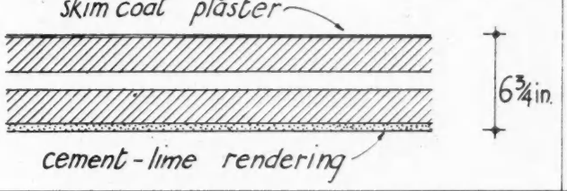
December 8 and 15.—" Development of Materials and Constructional Systems as Substitutes for Timber "—I and II.

1. SINGLE 4½ in BRICKWORK & BUILDING BOARD.

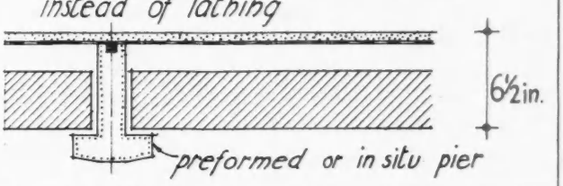
2. 8½ in BRICKWORK (cavity) BRICK-ON-EDGE INSIDE



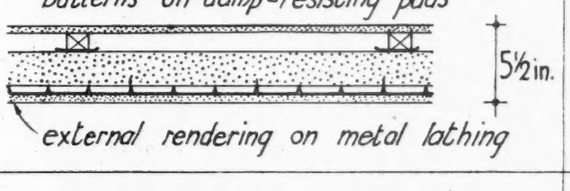
3. 6½ in BRICKWORK (cavity) 2/BRICK-ON-EDGE & SKIM



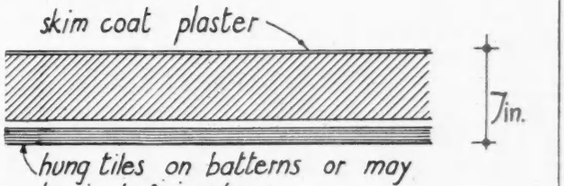
4. 4½ in BRICKWORK & PLASTER ON LATHING



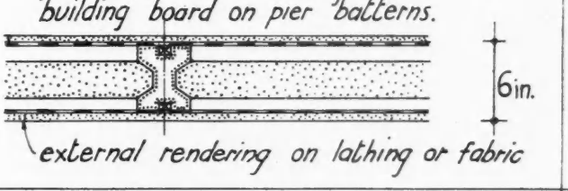
5. 2½ in PARTITION-BLOCK BUILDING BOARD & RENDERING.



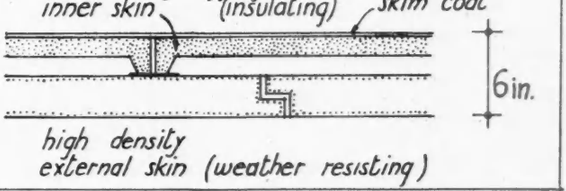
6. HUNG TILES ON 4½ in BRICKWORK



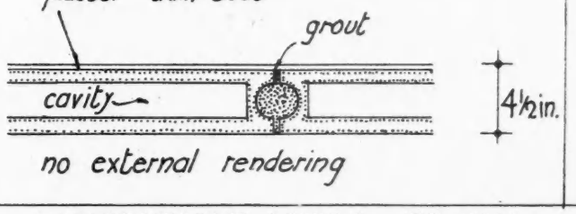
7. PARTITION BLOCK & DOUBLE CAVITY



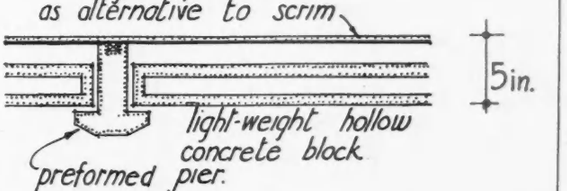
8. PREFORMED, SELF-FORMING CAVITY SOLID BLOCKS



9. HOLLOW PRECAST VIBRATED CONCRETE



10. LIGHTWEIGHT HOLLOW BLOCKS. PLASTER & SCRIM



LIGHTWEIGHT TYPES OF WALL CONSTRUCTION FOR SEMI-PERMANENT STRUCTURES. W.T.B.P. J. SHEET. 2.

IS IT A BAD TIME FOR THE ARTS?

By REGINALD HALLWARD.

THE subject of this article arose from a sentence in a friend's letter, that it was "a bad time for the arts," a remark which appears so obviously true as to be accepted without further inquiry. We must, however, distinguish between art and artists. When we trace back the fortunes of the arts, they do not seem to have depended always on peace and prosperity, but rather on a power resting in themselves. Is the present time, then, so unpropitious for the arts? In the long view I don't think it need be. I mean that the artist can create conditions as well as suffer from them. That he is suffering from them to-day cannot be denied, but not wholly as the result of the war. For his present disabilities are not different but only an extension of a state of being existing long before. And it may be that present calamities will in the end promote his greater well-being. At the time, after the Persian wars, of the great unemployment in Greece, Phidias was given the commission to execute the work on the Parthenon. In any case, do not let us believe, as some would tell us, that the arts are perishing. I write rather to dispute all such pessimism.

I hear, it is true, of 30,000 artists unemployed, which has set me thinking. I did not think there were so many. They are evidently not so rare as I thought. In any case, and in order to understand what has happened, we must realise that the present war has only set light to what was already inevitable. The war is not the sole cause of the present distress, though there may be found a connection between the events which were leading up to both.

We must realise the sort of anarchy that has overtaken the arts, about which there is no agreement as to what is beautiful, or noble, or civilised, or true, or intelligent—or even intelligible! Everything to-day is challenged. Everything has been thrown into uncertainty. But this is not all. The advancements of science and mechanical industrialism have invaded the arts, with which they have no necessary connection. Becoming so machine-minded, the skill of the craftsman tends to submerge the creative imagination of the artist, who finds himself replaced. Great painting or any other art, so wrote Longinus, is "the echo of a great soul." One foresees the antagonism against supposing the arts to have anything to do with ethics or religion. The adversities of the present time may yet show us that they have.

But to return to the present difficulties of the artist, which, as has been explained, are but the extension of what existed long before, though now aggravated by the state of war. It is no bad thing for the arts if attention should now be brought to them. We see as proof of this the formation of a Central Institute of Art, also the present exhibition of artists' work at the Royal Academy, as well as much correspondence in the daily Press, without multiplying instances, pointing to a reawakening of interest in art, as well as to the importance of helping the artist. It is no doubt too early to judge of the value of what is being undertaken, and how far the fundamental needs of creative art, which lie deeper, can be fostered in such a way.

But is all well with the arts? In addition to their necessities, we must try to understand the prevailing influences affecting them, favourable or otherwise, and that is another matter. Any permanent raising of the arts to a national influence must penetrate to industry, for in the end we are all members of one body, though the first responsibility is on the artist, whose conviction must be strong enough to withstand what opposes him. And it is an extraordinary symptom of the anarchy of the time that enlightenment does not come from the expected quarters but from artists, though highly gifted, sordid and partially insane! The seeds of the rehabilitation of the arts spring from such men, as witness the following from Van Gogh:

"Let them jabber about technique as much as they like, the true painters are guided by that conscience that is called sentiment. Their souls, their brains are not subject to the pencil but the pencil to their brains. Besides, the canvas is afraid of a real painter and not the painter afraid of the canvas. . . . Instinct, inspiration, impulse, conscience, are better guides than people think."

Though the exaggeration of a truth, Gauguin's "every artist is either a plagiarist or a revolutionary" is of profound meaning. It is this sort of devotion—the staking of all for their art—which is the faith of the "religious," whatever the failings in the source from which it comes. Nor is it a bad time for the arts if out of their present distress such convictions, extended and purified, lead them to achieve their right influence in life.

Further instances of this mixture of sense and insanity is to be observed in the excesses of the Surrealist movement—a witness to the anarchy that exists in the arts, though the amount of its influence is much distorted in the Press. For while claiming William Blake and other romantics, we see them at the same time dispossessing nature, beauty and tradition to the poverty of their own subjective and unbalanced minds. In trying to account for this, we may see it as a revolt from the feebleness and unreality sheltering under those names, though but an escape from one falseness to another. To try to invent the arts anew in such a way is madness! They were shaped long ago, and why should we, who are but a moment in time, reject the whole past? The movement, when it finds its right attachments again in nature, beauty and tradition, should bring a new and constructive contribution to the arts in freeing them from outworn and pedestrian experience. The present time, which is bringing them up against a reality they cannot escape, may convert what is false into the something in the movement that is true. Adversity teaches!

The evidence of civilisation is seen in the ascendancy of creative imagination—vision—without which we perish. It takes a highly developed imagination to be a realist, otherwise we are but pawns of the present. If our present distress should discover for us again these truths it were worth the suffering. Have we then pursued our errors to the end, to become wise? The process of change, the reorientation of the creative arts will be difficult. Much has to be burnt up when seen for what it is. Our existing institutions for art will dissolve as the old and discredited give place to the new. "It is strange how antiquated is the appearance of institutions which are founded merely on a state of being and self-preservation at a time when everything is striving after a state of growth and change" (Goethe).

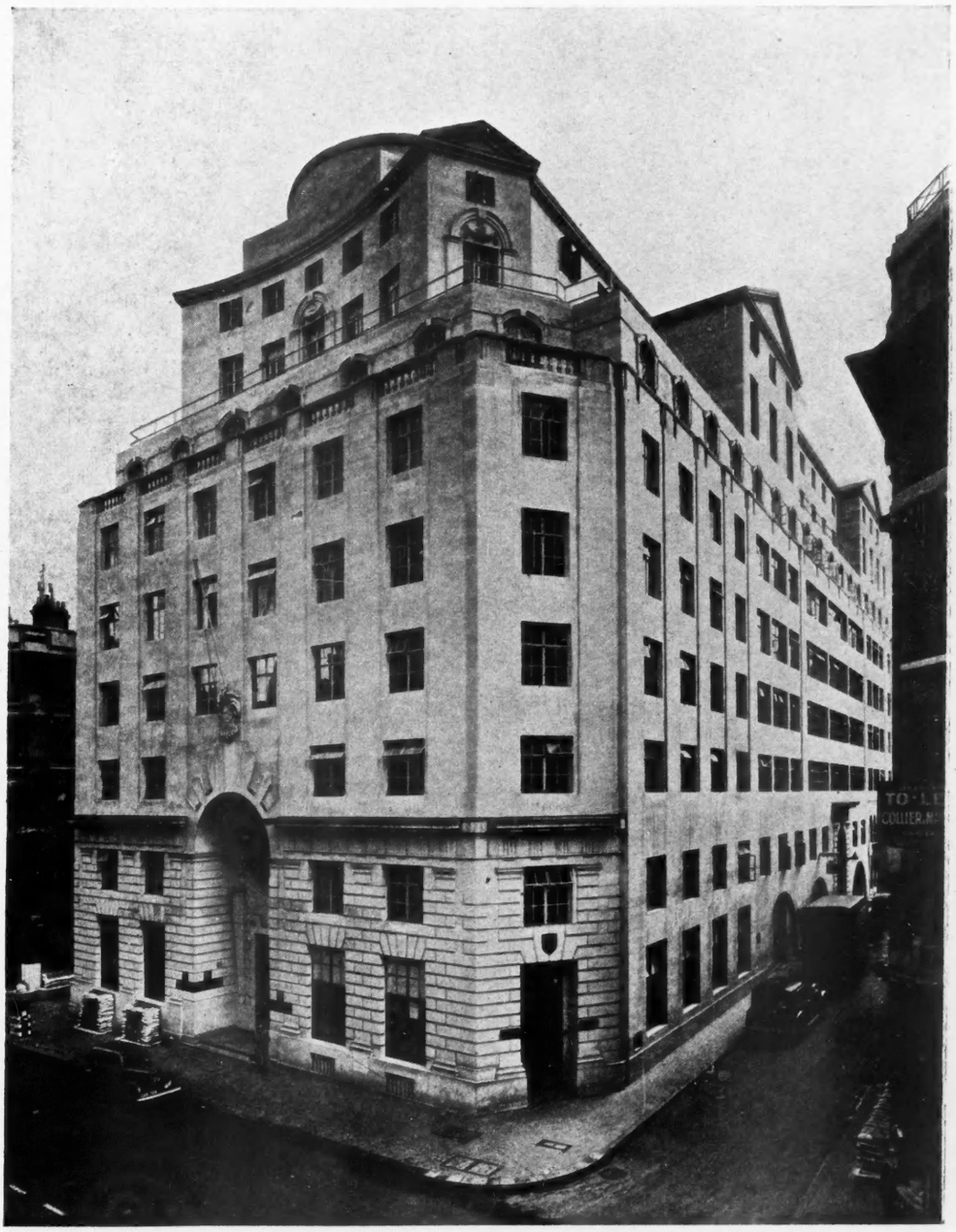
Though it is the nature of art that it must be free from insecurity, the artist's life should not be a privileged one. This is better recognised in Russia under its present government than it is here. Security in the practise of his art from the burden of unemployment is there largely afforded. In America, the conscience of the nation has been moved to take measures that the artist's employment should be better secured, from a growing sense of its national importance. These better conditions are not yet existent in this country. Yet we deeply need the enlightenment the arts can bestow, the ampler world of their better vision to mitigate these evils. If we are looking more towards them in the darkness of our present life, is it altogether a bad time for art? According to Montaigne, "To man evil is in its turn a good." If we, now, turned back on ourselves, have the imagination to be realists of our time, and learn from it, we might yet "strike up for a new world."

The churches arrange, for the best service of their vocation, that the clergy be provided with their livelihood, to leave them free for their ministrations from the necessity of ways and means. However far from recognition to-day, a similar security should belong to the creative artist, whose work is so closely allied. Beauty is worship as well as prayer. I am not preaching Utopias, or expecting a Golden Age, but the need of this was asserted by Goethe, and will be understood by those who realise the nature of art, which is different from the buying and selling of the market place. I do not think, however, that employment of artists on camouflage or war pictures advances the claim towards it!

It will never become easy for the artist. The arts have always to be struggled for, against the materialism of things. Nor will poverty hurt him—it is much safer than wealth and ease—he needing but little beyond subsistence for his life's work and freedom for the doing of it, neither of which are his to-day. He should say, as was said by Beethoven: "For me the spiritual kingdom is dearest," though it may reasonably include cakes and ale. But the improvement of his circumstances alone will not necessarily produce fine artists, for there is no recipe for the arts. Better opportunity should nevertheless encourage this more than his present neglect and insecurity.

So, in reply to my correspondent, that it is a bad time for the arts, my answer is that it need not be so, in spite of present difficulties for the artist. Forced back on ourselves, under the reality of events, menacing though they are, we may envisage a better reality, which ennobles life instead of destroying it, one in which the creative arts are enabled more freely to make their contribution to the life of the nation, and so mitigate the evils of the sham art of mass production.

I do not think, as some would tell us, that civilisation is perishing. Like Oliver Goldsmith, who said it of himself, "I have a knack of hoping," and see in what we are suffering the protracted birth pains of a new era. It may be we shall reach the happy isles. Both for the arts, as for civilisation itself, it is the hour of buying and selling, when glass is glass and jewels are jewels. The failure of humanity is not entire. Let us reject pessimism. *Civilisation est mort—vive la civilisation!*



VIEW FROM FLEET STREET.

NEW BUILDING FOR REUTERS AND THE PRESS ASSOCIATION, FLEET STREET, E.C.4.

DESIGNED BY SIR EDWIN LUTYENS, K.C.I.E., P.R.A., IN ASSOCIATION WITH MESSRS. SMEE AND HOUCHIN, F.R.I.B.A.

DETAIL OF MAIN FRONT. THE FIGURE OF "THE HERALD" IS BY SIR WILLIAM REID DICK, R.A.

NEW BUILDING FOR REUTERS AND THE PRESS ASSOCIATION, FLEET STREET, E.C.4.

THIS new building, at 85, Fleet-street, E.C.4, has been designed for Reuters and the Press Association by Sir Edwin Lutyens, K.C.I.E., P.R.A., and Messrs. Smee and Houchin, F.R.I.B.A., and built by Messrs. Ashby and Horner, Ltd.

PLANNING.—The principal entrance at ground floor is from Fleet-street, and leads to the lifts and to the main staircase. The first, second, third and fourth floors are for letting. The fifth and sixth provide accommodation for Reuters and Press Association activities, in addition to portions of the seventh and eighth floors. The principal feature of the seventh floor, however, is the dignified conference room with adjoining octagonal hall. The eighth floor contains a number of bedrooms for resident staff, and kitchens which serve the directors' dining-room and staff restaurant. The ninth floor houses lift motors, tanks, etc.

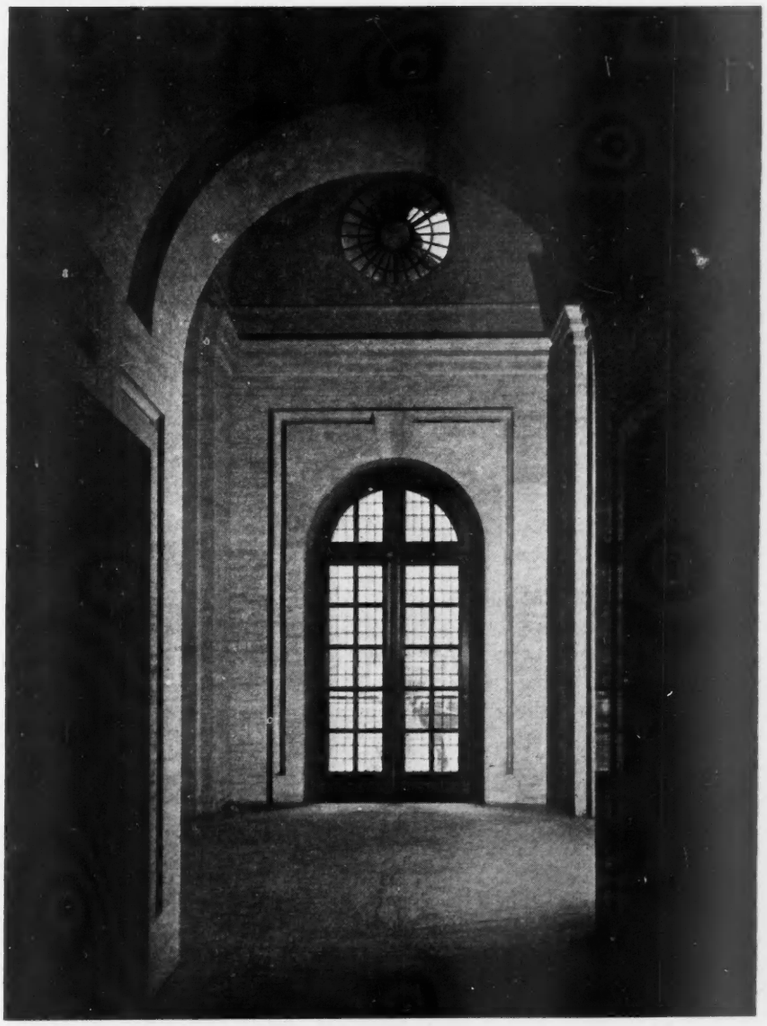
CONSTRUCTION.—A steel-framed building, faced with Portland stone. Floors are of hollow-tile construction. Window frames are some of iron and some of bronze. A feature of the entrance front is a bronze-gilt figure of "The Herald," which has been designed by Sir William Reid Dick, K.C.V.O., R.A., to fill the circular opening over the main entrance door in Fleet-street. Stone carving is by Mr. Allan Howes, A.R.B.S.

FINISHES.—The north (Fleet-street) entrance door is in teak and the walls of the entrance hall lined with Tivoli Travertine and the floors with the same material and golden Travertine. The main staircase has walls and treads of Tivoli Travertine, with black rubber treads inlaid. The balustrade of wrought iron

is lacquered orange-vermilion, the handrail being of polished bronze. The south (off Salisbury-court) entrance-hall has walls and floors lined with Tivoli Travertine; the walls of this staircase are plastered and the balustrade treated similarly to the main staircase. The lift cars are of sheet steel lacquered orange-vermilion, the interiors being panelled in mirrored glass.

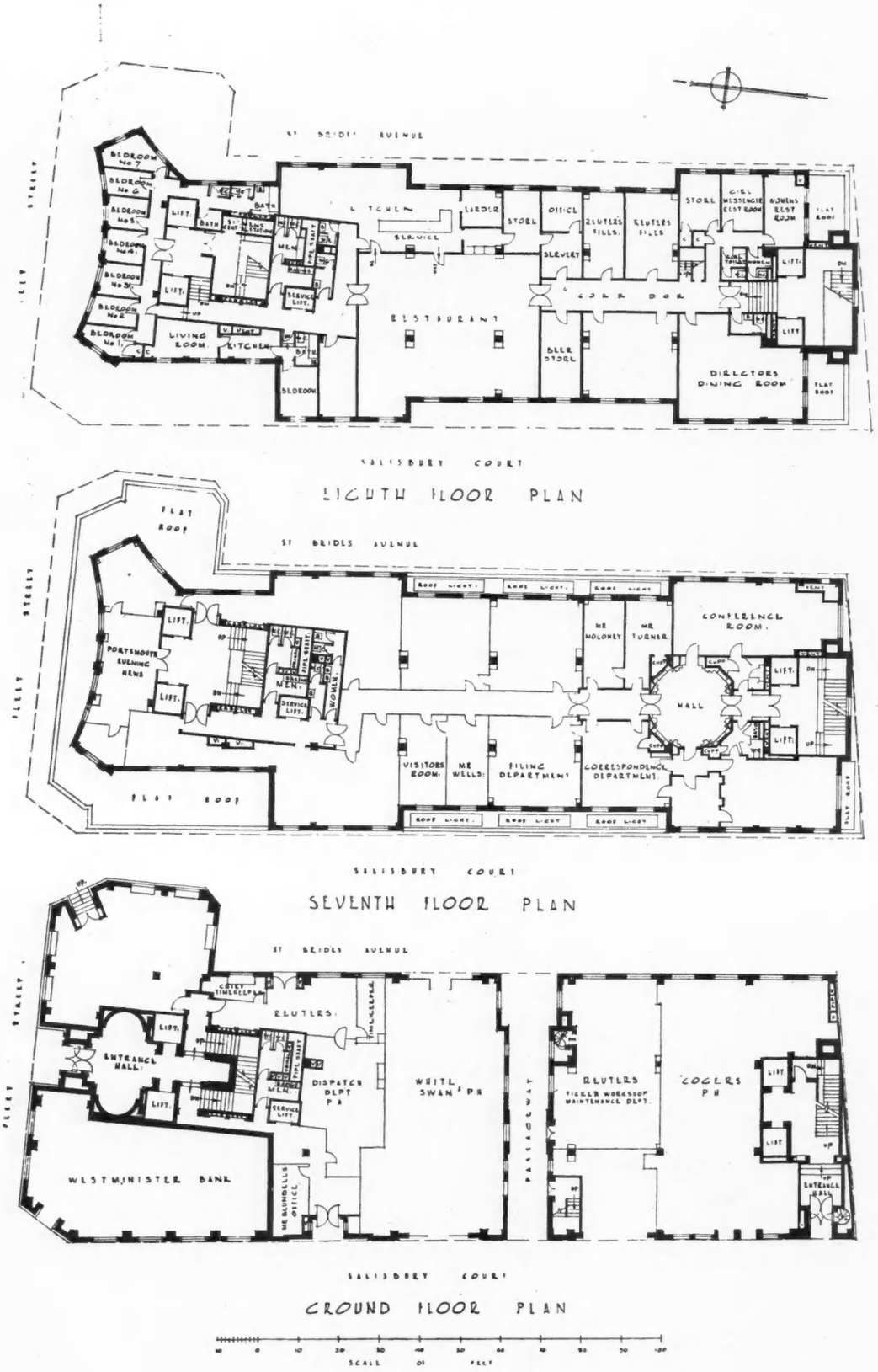
The conference room and directors' rooms, and the octagonal hall from which they are entered, are panelled in teak. In the entrance-hall, at ground floor, a feature is a posting-box and clock combined, designed in teak by Sir Edwin Lutyens.

The steelwork consultant was Mr. Ewart S. Andrews, B.Sc., Messrs. Handcock and Dykes being the electrical consultants, and Mr. E. Hamilton Ashby, F.S.I., the quantity surveyor. A list of the principal sub-contractors is on page 83.



Above : FIRST-FLOOR LANDING.
Right : THE GROUND-FLOOR ENTRANCE HALL.

DESIGNED BY SIR EDWIN LUTYENS, K.C.I.E., P.R.A., IN ASSOCIATION WITH MESSRS. SMEE AND HOUCHIN, F.R.I.B.A.



NEW BUILDING FOR REUTERS AND THE PRESS ASSOCIATION, FLEET STREET, E.C.4.

DESIGNED BY SIR EDWIN LUTYENS, K.C.I.E., P.R.A., IN ASSOCIATION WITH MESSRS. SMEE & HOUCHIN, F.R.I.B.A.

THE CONFERENCE ROOM AT SEVENTH FLOOR.

THE OCTAGONAL HALL AT SEVENTH FLOOR.

NEW BUILDING FOR REUTERS AND THE PRESS ASSOCIATION, FLEET STREET, E.C.4.

DESIGNED BY SIR EDWIN LUTYENS, K.C.I.E., P.R.A., IN ASSOCIATION WITH MESSRS. SMEE & HOUCHIN, F.R.I.B.A.

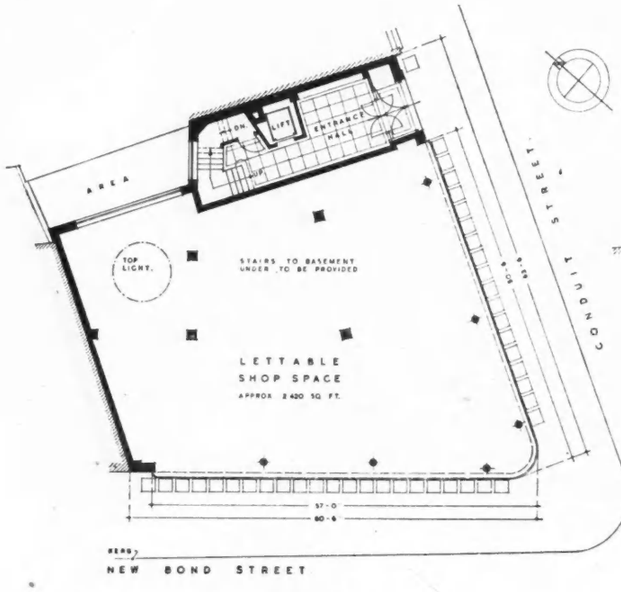
SHOPS AND OFFICES, 24–25, NEW BOND STREET, W.1.

SITUATED on the corner of New Bond-street and Conduit-street, this building provides showrooms on the ground floor with basement, and well-lighted offices over. An interesting feature is the recessing of the columns in the ground storey to give complete freedom in shop-front design. The office entrance in Conduit-street gives access to staircase and lift serving all the upper floors.

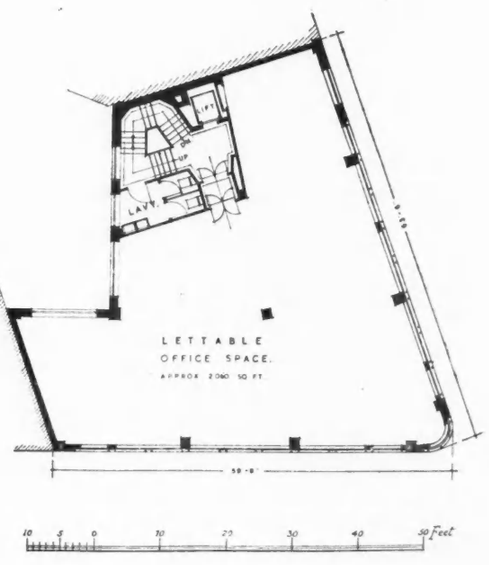
The street elevations are finished in Portland cement moulded on the surface between the long horizontal windows to accentuate the design. The metal windows are deeply recessed, and in front of them cast-iron balusters support the lintel stones with cast-iron heads and sills. All roofs are finished in asphalt. The office entrance hall and staircase have marble floors and wall linings, with cast-iron balustrade and bronze handrail. The lavatories are tiled, with pre-cast w.c. divisions. The floors to the offices are battened and counter-battened and finished in narrow strip boarding.

The general contractors were Messrs. F. G. Minter, Ltd., and sub-contractors were: Demolition, F. Boultwood and Son; excavations, Willment Bros., Ltd.; steelwork, Redpath Brown and Co., Ltd.; asphalt, The Ragusa Asphalte and Paving Co., Ltd.; heating, Rosser and Russell, Ltd.; lifts, Waygood-Otis, Ltd.; balustrade to main staircase, J. Starkie Gardner, Ltd.; fire escape staircase, F. A. Norris and Co., Ltd.; floors, Caxton Floors, Ltd.; metal windows, The Crittall Manufacturing Co., Ltd.; electrical installation, The Berkeley Electrical and Engineering Co., Ltd.; pavement lights and dome light, Lenscrete, Ltd.; decorations, F. G. Minter (Decorations), Ltd.; drains and general plumbing, Matthew Hall and Co., Ltd.; scaffolding, Stephens and Carter, Ltd.; stone carving, F. B. Francis and Son; gas installation, Gas Light and Coke Co.; sanitary fittings, W. N. Froy and Sons, Ltd.; plastering, I. H. Jenner and Co., Ltd.; oak strip and wood block floors, Hollis Bros. and Co., Ltd.; marble wall lining, Art Pavements and Decorations, Ltd.; slating, Roberts Adlard and Co., Ltd.; ironmongery, Joseph Kaye and Sons, Ltd.; glazing, Aygee, Ltd.; and floor tiling, Ramsdens (London), Ltd.

MESSRS. WIMPERIS, SIMPSON AND GUTHRIE, FF.R.I.B.A., ARCHITECTS.

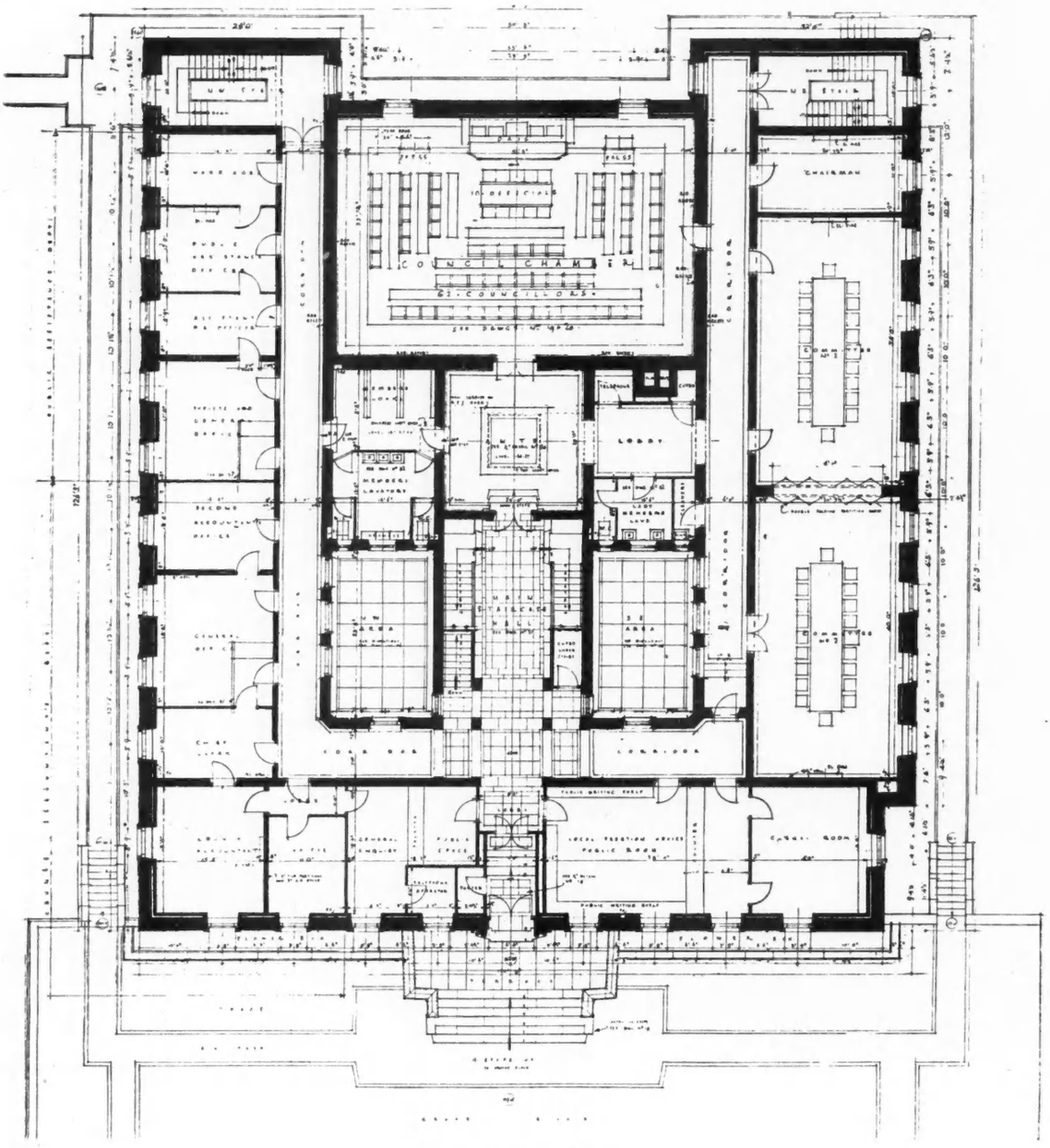


GROUND-FLOOR PLAN.



TYPICAL UPPER-FLOOR PLAN.

WESTMORLAND COUNTY HALL, STRICKLANDGATE, KENDAL. MR. VERNER O. REES, F.R.I.B.A., ARCHITECT.



THE GROUND-FLOOR PLAN.

WESTMORLAND COUNTY HALL, STRICKLANDGATE, KENDAL.

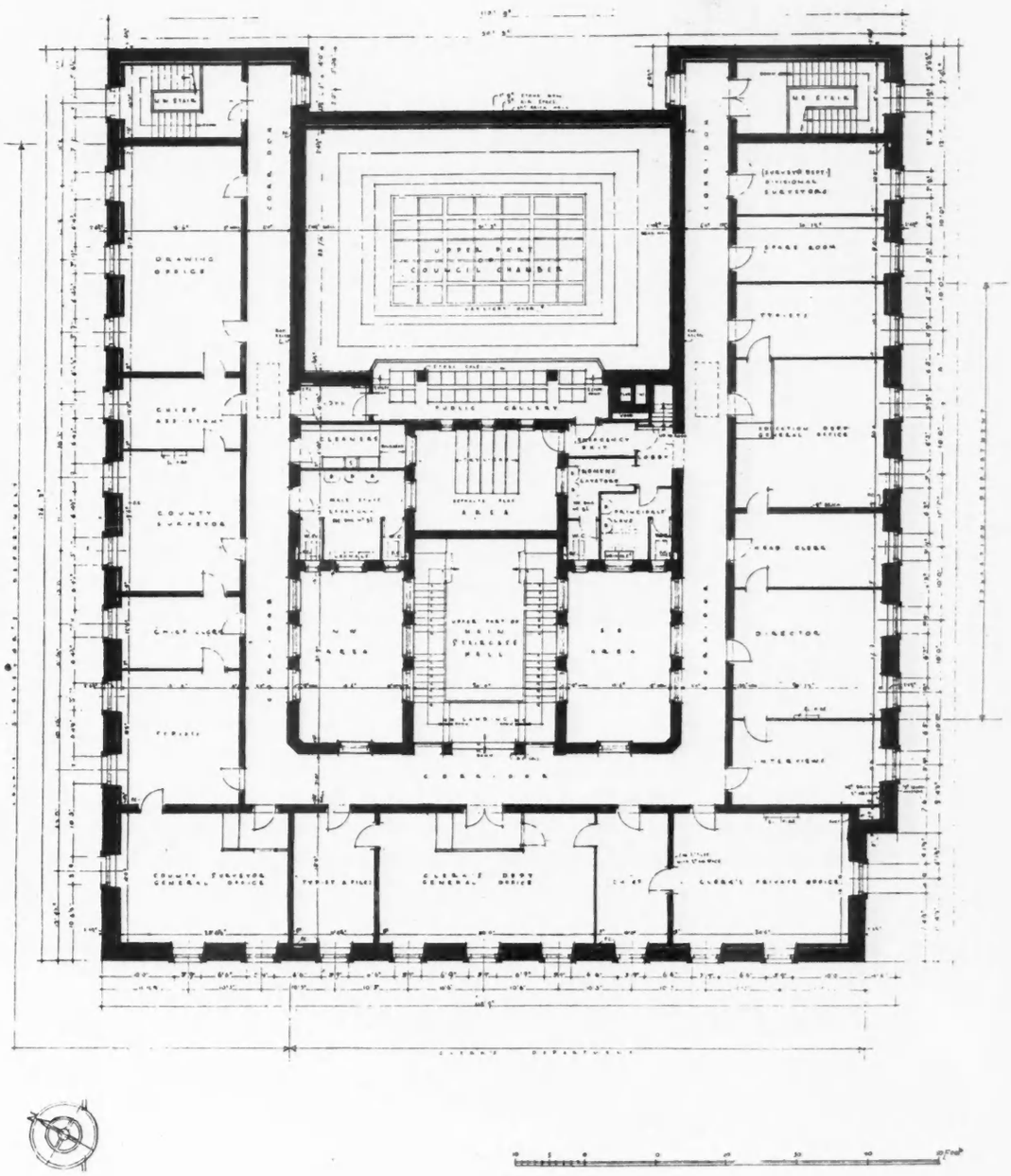
MR. VERNER O. REES, F.R.I.B.A., ARCHITECT.

An open competition for designs for this new building was held early in 1935, and the selection of the assessor, Mr. G. H. Foggitt, F.R.I.B.A., was illustrated in *The Builder* for August 9. The scheme was estimated to cost £68,000, but after the competition the County Council decided to reduce considerably the extent of the scheme and its cost. The cubical contents of the new building are 595,000 cubic feet, and the price per cubic foot works out at nearly 1s. 8d., the contract price being £47,200.

Planning.—The accommodation includes a council suite of council chamber, 51 ft. by 33 ft. 6 in. wide by 25 ft. high, seating 62 councillors; an ante-room, 20 ft. by 20 ft.; two committee rooms, 78 ft. by 20 ft. when used together; chairman's room; cloaks and lavatories. There are offices for the clerk to the council, local taxation, the county surveyor, accountant, education officer, medical officer, etc., comprising altogether 37 rooms of a total area of 11,500 sq. ft. The plan is arranged so that the office accommodation can be doubled in area in the future.

Construction.—The use of local material was urged in the conditions of competition, and the new building has, in fact, been built very largely with the excellent building materials available locally. External walls are constructed of 21-in. Kendal Fell limestone supplied from the Pennington quarry to the south of the town, with a 3-in. cavity behind and an inner lining of 4½-in. brickwork, making a total width of 2 ft. 4 in. The stones on the exterior faces of the walls were squared by a diamond saw, and then hammered and "dintered" by the masons, and laid "weathershot" (*i.e.*, on a bed sloping outwards).

Dressings to windows and doorways are of Whitbed Portland, and long strings and copings are of



THE FIRST-FLOOR PLAN.

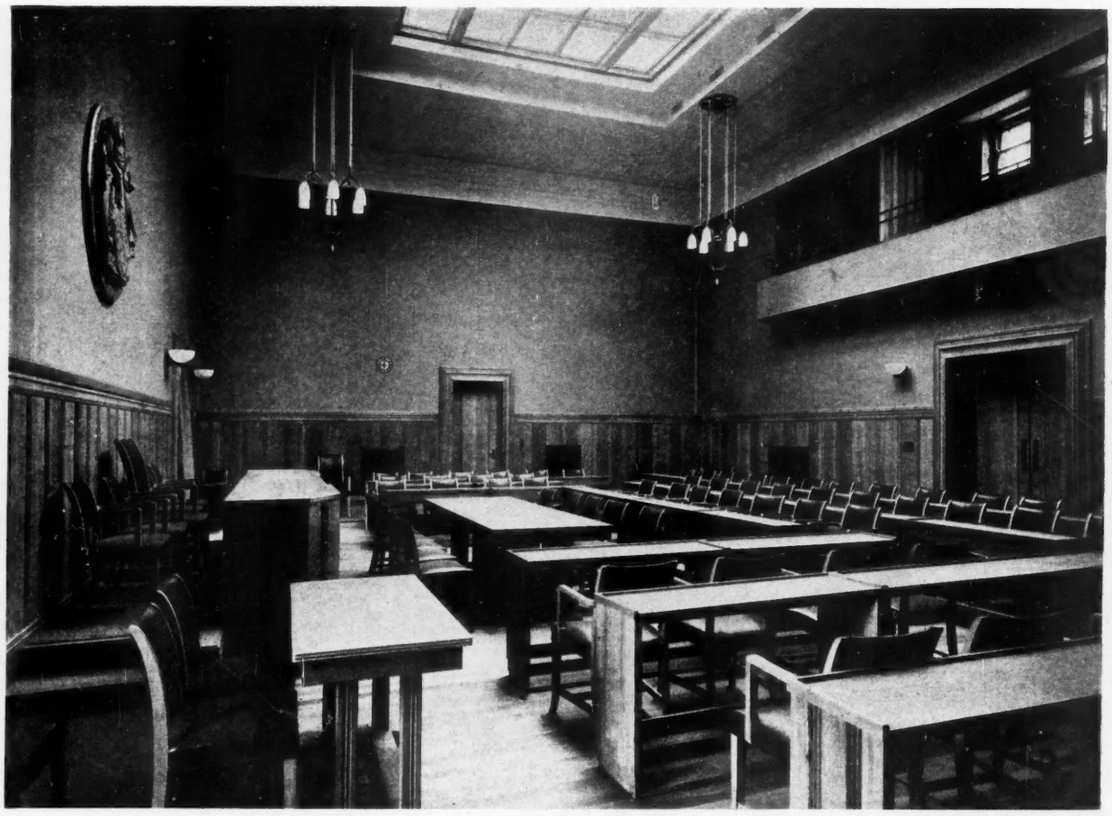
Grange-over-Sands limestone. Thick layers of green slate were used as damp-courses, and sawn slate of different thicknesses was also used for ventilation louvres, paving stones, and internal window sills over radiators. The roof is covered with green slating of medium tone and "thirds" in thickness, laid random lengths in diminishing courses, from the Elterwater quarry near Langdale. For the aggregate of the concrete floors lake gravel or "Shilloe" was obtained, and all the sand for concrete and plasterwork was greensand from Lake Windermere.

FINISHINGS.—Internal finishings are of plain and country-like character. Plastering to the principal rooms and the corridors was carried out in white Keene's, left rough from a wood float and left without distemper. Walls of office rooms are distempered white. Grey Woodkirk stone, with green slate margins, has been used for the steps, landings and flooring of the staircase hall.

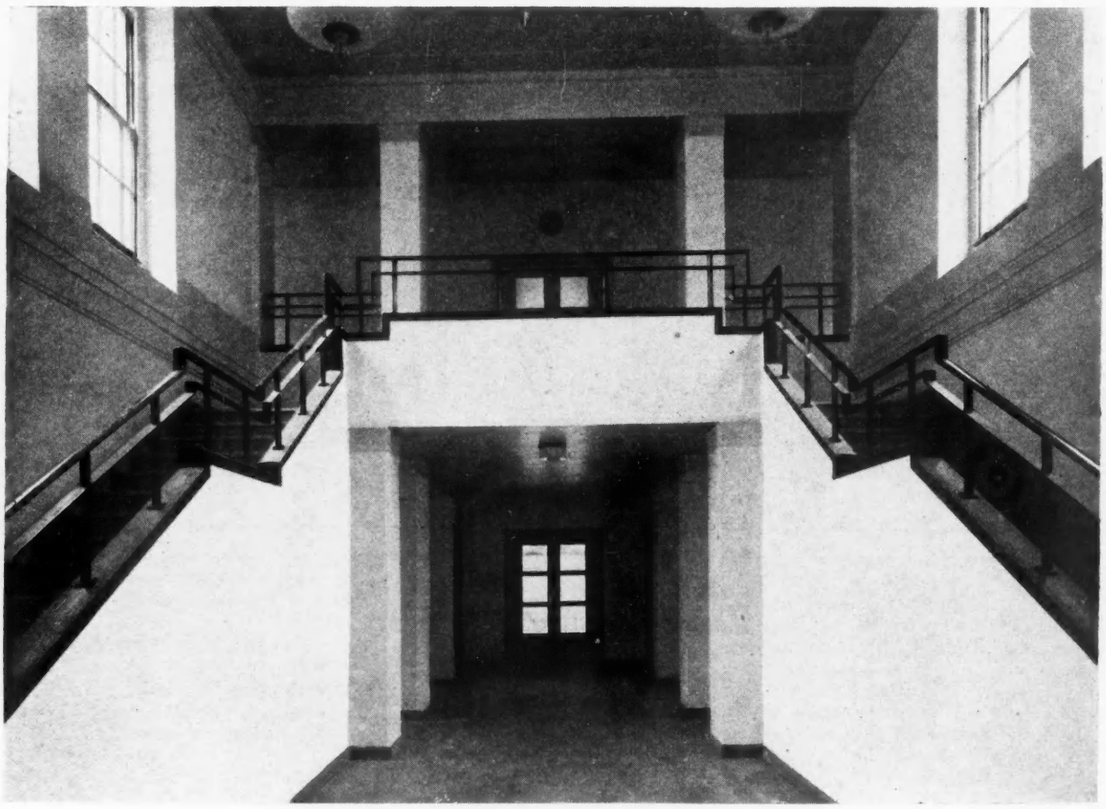
The Council Chamber is panelled to a height of 6 ft., and all joinery here and to the committee room is in English oak, treated with white shellac, and well sand-papered afterwards so that the natural colour of the wood is in no way affected. The walls are lined with slag-wool blanketing on battens, and covered with tapestry of a "porridge" colour.

Except for the County Arms, carved in oak by Mr. Harold Stabler, there are few features of decorative character. Contemporary stylistic mannerisms have been avoided as much as possible, as also features of period derivation. The interior was designed generally to seem of no particular date, and to consist only of white walls with doors, floors and fittings of natural materials. Green, the local colour, occurs occasionally, as for the slate sills of the windows, green-lettered direction plates, Kendal Green hide of the chairs, and other small details about the building.

The consulting engineer was Mr. A. Grunspan, M.Inst.C.E., the quantity surveyors being Messrs. Cameron and Stephens, and the clerk of works Mr. A. Hutchinson. Messrs. G. F. Martindale & Sons, of Kendal (who also executed the reinforced concrete and masonry work and all joinery), were the builders, while sub-contractors will be found on page 83.



THE COUNCIL CHAMBER.



VIEW FROM THE STAIRCASE HALL, LOOKING TOWARDS ENTRANCE.

WESTMORLAND COUNTY HALL, STRICKLANDGATE, KENDAL.

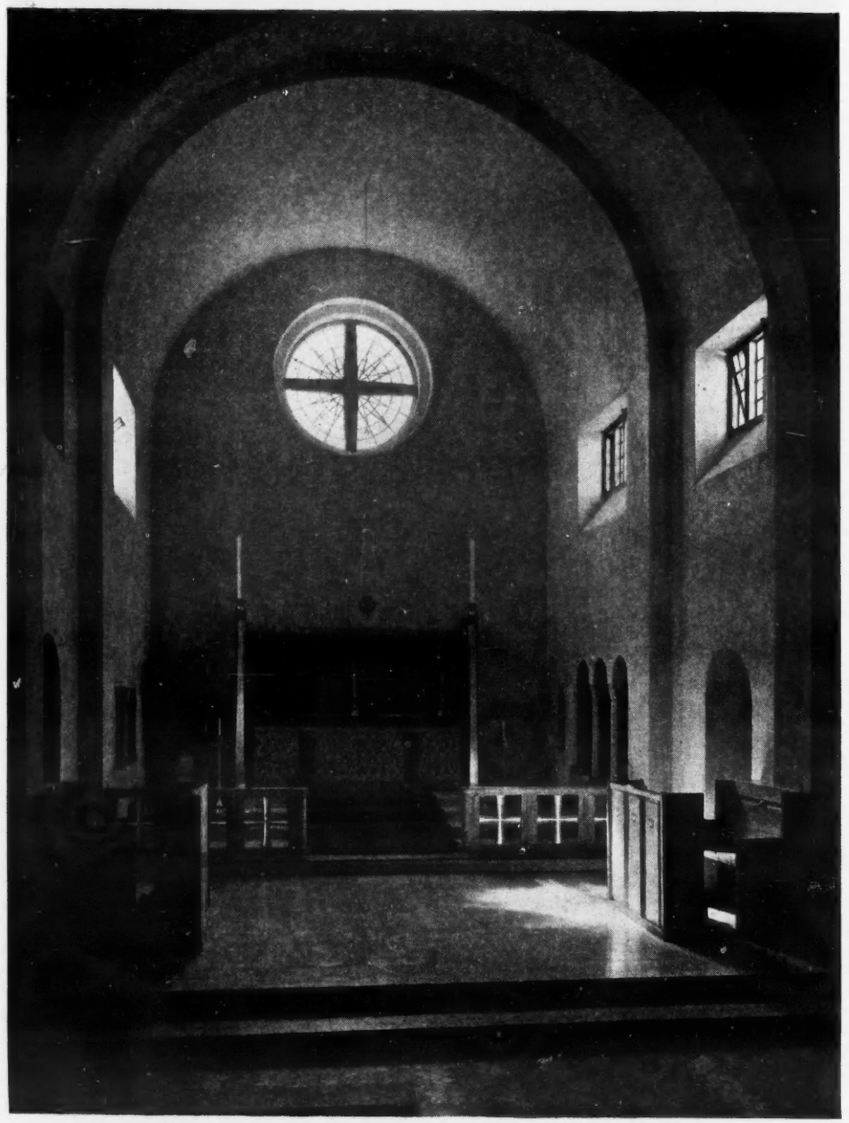
MR. VERNER O. REES, F.R.I.B.A., ARCHITECT.

ALL SAINTS' CHURCH, WESTON GREEN, SURREY.

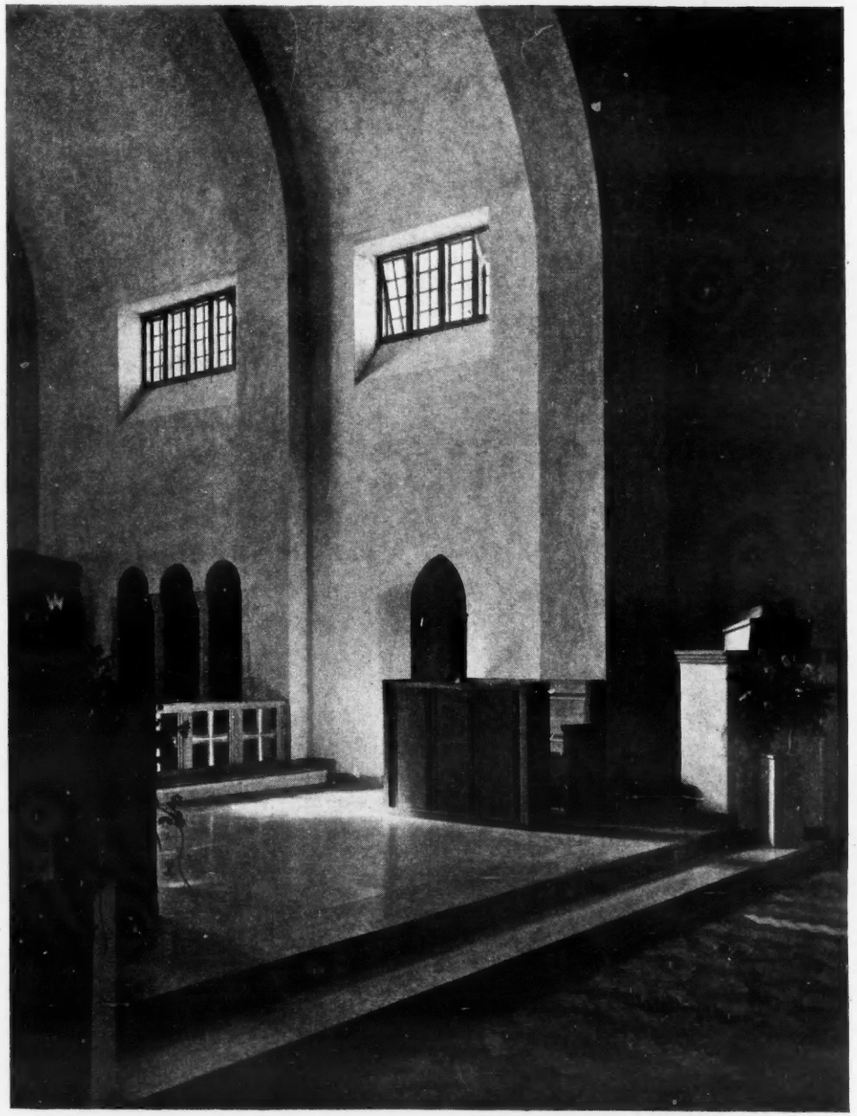
MR. EDWARD MAUFE, A.R.A., ARCHITECT.

VIEW FROM NORTH-WEST.

VIEW FROM SOUTH-EAST.

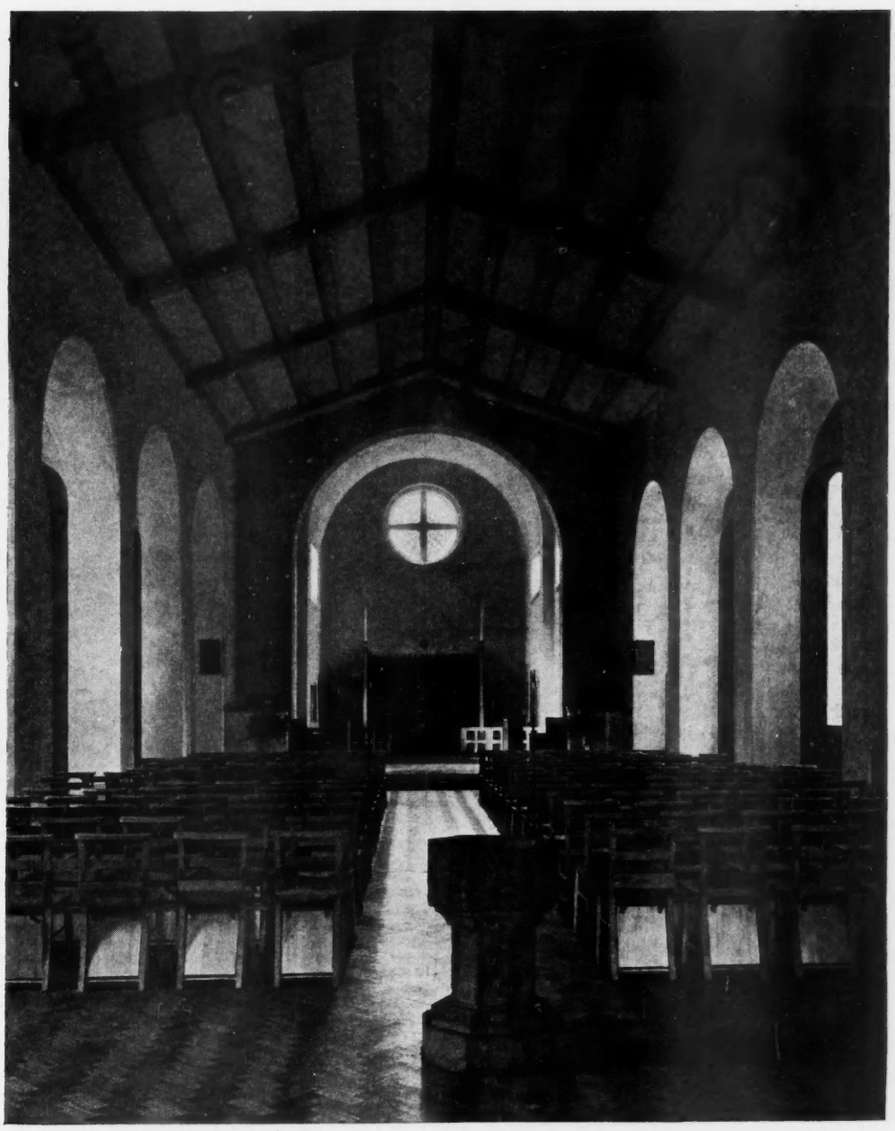


THE CHANCEL, LOOKING WEST.

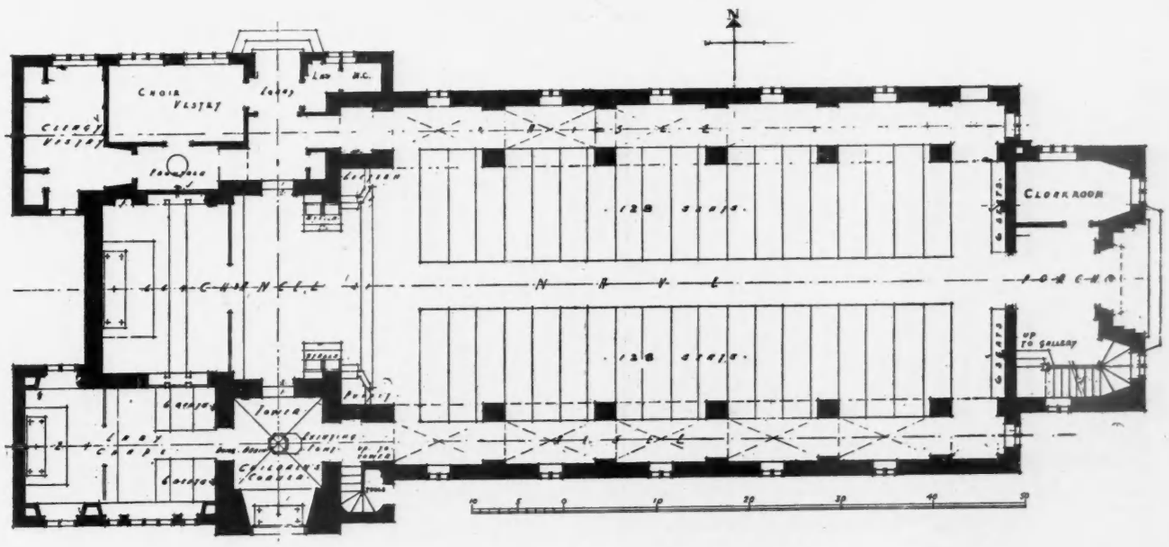


VIEW LOOKING NORTH-WEST INTO CHANCEL.

ALL SAINTS' CHURCH, WESTON GREEN, SURREY. MR. EDWARD MAUFE, A.R.A., ARCHITECT.



VIEW LOOKING WEST, TOWARDS CHANCEL.



ALL SAINTS' CHURCH, WESTON GREEN, SURREY. MR. EDWARD MAUFE, A.R.A., ARCHITECT

ALL SAINTS' CHURCH, WESTON GREEN, SURREY.

RECENTLY built at Thames Ditton, this church is one of four new churches for the Guildford diocese.

PROBLEM.—To design a church with accommodation of approximately 320 with a tower, at a cost of £8,000. A vicarage to be built later on the same site.

SITE AND LAYOUT.—The site is a very attractive one, with good trees and a large pond at the edge of a common. The tower is placed at the end of the main approach road. The church is designed to form a unity with the future vicarage. The south side of the church to pond is developed as a water terrace.

PLANNING.—The approach road is on the east, but the parochial church council agreed that the main central entrance should be at the east, to get direct planning. A passage aisle type of plan was adopted, with the lady chapel on centre of south aisle. The choir is in east gallery, while a study for the vicar is included in the tower. There is a vaulted children's chapel at base of the tower.

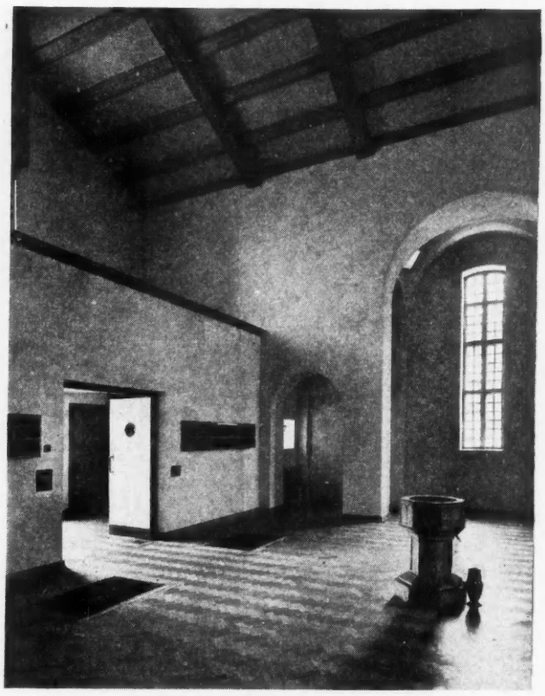
CONSTRUCTION, MATERIALS, ETC.—There are Hunziker brick walls and arches, slurried externally with "Coat-o-stone." There are stone-coloured roofing tiles. The east door hood is in cast lead, with an inscription finished in gold, reading "Venite Adoremus Deo."

INTERNAL FINISHES.—Internally, walls are finished in plaster with wood floats left uncoloured. The roof is of pine beams left natural, with silver metal stars as fixing studs. "Tentest," left natural, has been placed between beams. The nave floor is in Seraya from British North Borneo. The chancel floor is in Travertine. There is a stepped sedilia. The piscina is in Clipsham stone, with carving by Mr. Vernon Hill. The lighting is concealed, using electricity.

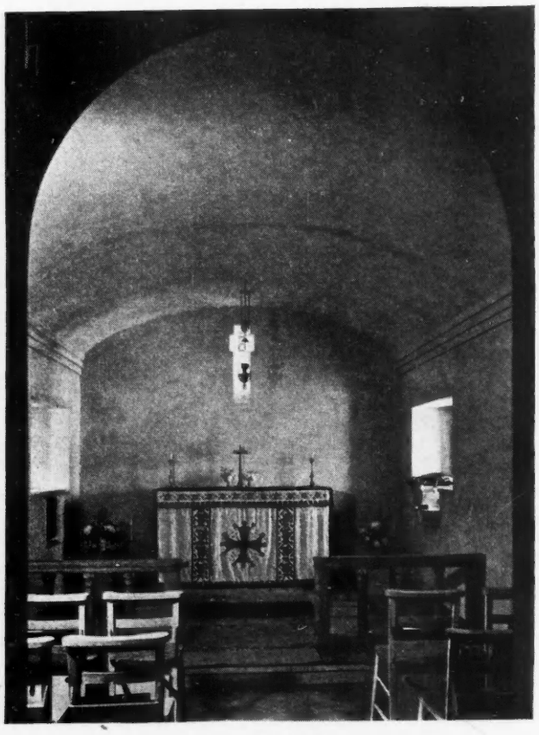
HEATING.—There is a pipeless heating installation with electric fires in vestries and study.

The contract price was £7,982. All furnishings were designed by the architect except for font and lady chapel frontal, cross and candlesticks, which are reused from the temporary church.

The general contractors were Messrs. F. and H. F. Higgs, Ltd., Surrey Works, Cobham, Surrey, who also executed the clergy stalls and fittings in clergy vestry. The foundation stone and lettering were executed by Mr. Eric Munday. Sub-contractors were: bricks, Hunziker, Ltd., Uxbridge; heating, Chase and Co., Ltd., S.W.1; roof tiling, Roberts, Adlard and Co., Ltd., Bermondsey, S.E.16; windows and cross, Wainwright and Waring, Ltd., Mortlake, S.W.14; paving, J. Whitehead and Sons, Ltd., Kennington Oval, S.E.11; flooring, Hollis Bros. and Co., Ltd., E.16; lightning conductor, R. C. Cutting and Co., Ltd., Ludgate Hill, E.C.4; suspended ceilings, Trussed Concrete Steel Co., Ltd., Westminster, S.W.1, and M. and E. Equipment, Ltd., Elizabeth-street, S.W.1; iron vertical ladder and dome light, Haywards, Ltd., S.E.1; rainwater heads, R. L. Pickard and Co., W.1; ventilators, Fred. Braby and Co., Ltd., N.W.1; sanitary fittings, Shanks and Co., Ltd., W.1; electrical installation, W. L. and F. M., Jones, Ltd., Cobham, Surrey; electric light fittings, Heal and Son, Ltd., W.1, Edison Swan Electric Co., W.C.1, Tucker and Edgar, N.W.1, and Holophane, Ltd., S.W.1; bell, Mears and Stainbank, Whitechapel, E.1; balcony, railings and flagstaff, J. Starkie Gardner, Ltd., S.W.18; field gates, Plashett Saw Mills, Isfield, Sussex; chairs, Mealing Bros., Ltd., High Wycombe; clocks, Gent and Co., Ltd., S.W.1; electric fires, Ferranti, Ltd., W.C.2; ironmongery, James Gibbons, Ltd., W.C.1; clergy stalls and fittings in clergy vestry, F. and H. F. Higgs, Ltd.; alms boxes, Charles Farris, Ltd., Hounslow; aumbry, A. R. Mowbray and Co., Ltd., W.1; altar furnishings, Norrington and Adams, W.1; and altar and riddle posts, Heal and Son, Ltd., W.C.1.



VIEW AT EAST END, LOOKING INTO PORCH.



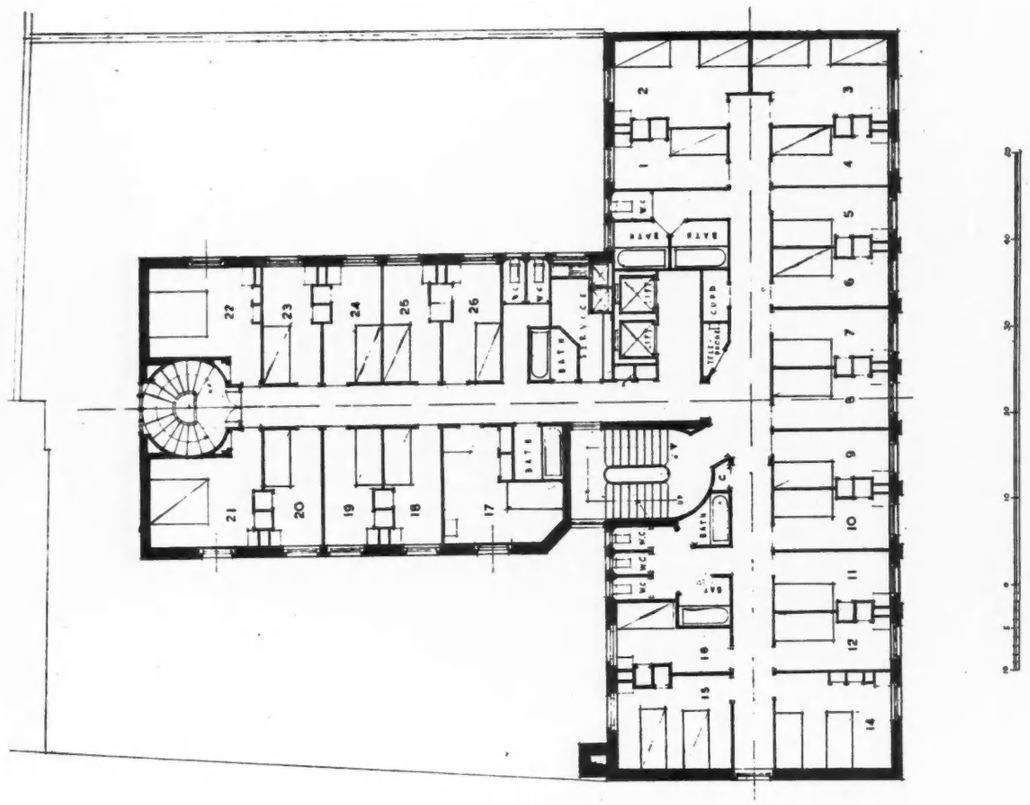
THE LADY CHAPEL.

MR. EDWARD MAUFE, A.R.A., ARCHITECT.

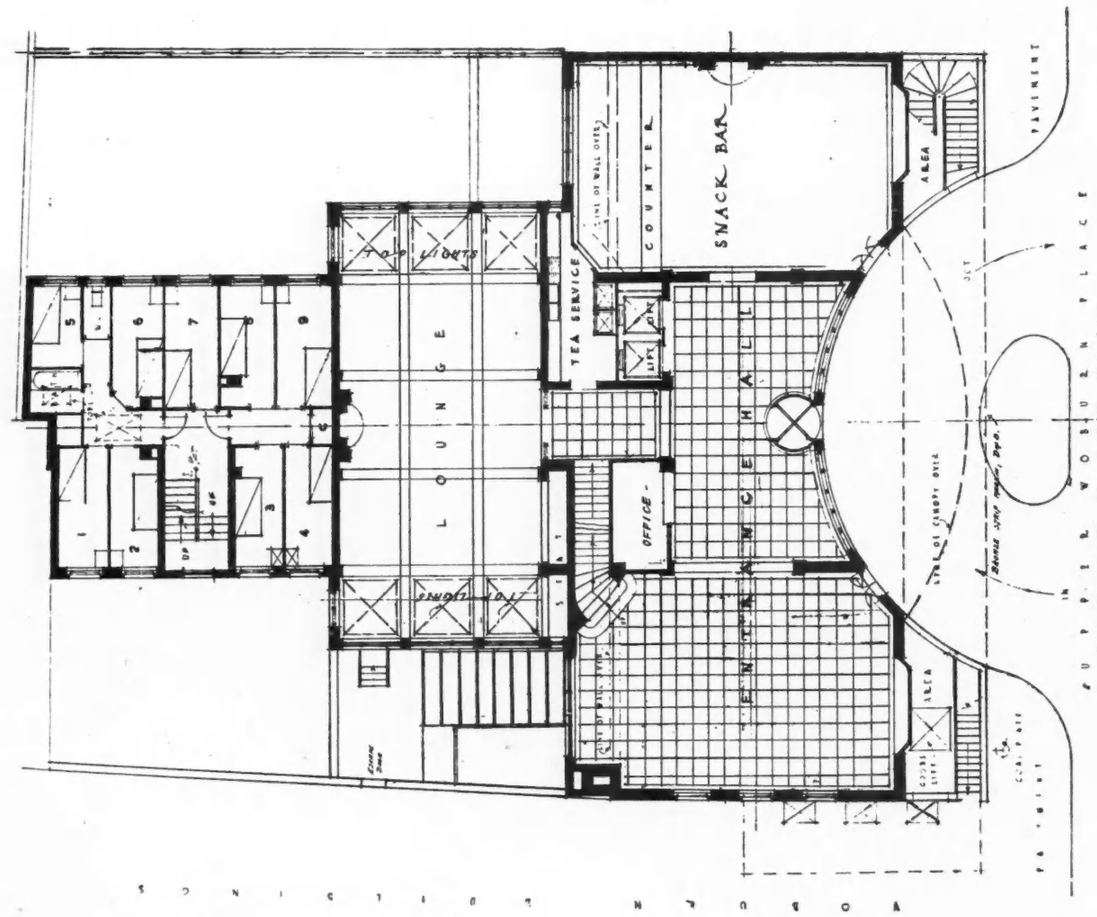
THE MAIN FRONT.

THE COUNTY HOTEL, WOBURN PLACE, W.C.

MR. C. LOVETT GILL, F.R.I.B.A. (RICHARDSON AND GILL), ARCHITECT.



FOURTH FLOOR PLAN



GROUND FLOOR PLAN

THE COUNTY HOTEL, WOBURN PLACE, W.C. MR. C. LOVETT GILL, F.R.I.B.A., ARCHITECT.

DETAIL OF CANOPY AND MAIN ENTRANCE.

THIS building was completed ready for occupation at the outbreak of war; owing to the conditions then created it has never been opened.

GENERAL.—The hotel has been designed to meet the demand for accommodation for what is known as "at popular prices," and gives varied accommodation on each floor of single and double rooms; each room is fitted with built-in cupboard, wash-basin and electric clock, with groups of w.c.s and bathrooms at certain points, the usual fittings, beds and doors all being in oak. The accommodation is for about 200 people.

PLANNING.—The planning of the ground floor, as is usual in hotels, has very little in common with the bedroom floors over, and an attempt has been made, by keeping to axial planning, to obtain vistas and a sense of space for a small hotel. Staff accommodation is placed on two floors at the back of the ground floor, so as to enable them to be in convenient proximity to their work. The main dining-room is placed underneath the snack bar, with lower hall, off which cloakroom accommodation is provided both for residents and non-residents. There is also an additional entrance to dining-room direct from the street.

STEEL CONSTRUCTION.—The constructional steelwork for this building presented a few interesting problems such as frequently arise in hotels due to the disparity in planning requirements between the ground floor and the residential floors above. A considerable number of the upper stanchions (which if continued down to foundation level would have caused obstruction) are carried instead by heavy girders at the first-floor level. Additional complications arose on account of the curved road serving the main entrance sweeping under the building line—a requirement demanded by the London County Council. The level soffit of the projecting canopy actually conceals a network of girders devised to support the superstructure, carried upon stanchions so arranged as to avoid encroachment upon the spacious planning of the entrance.

Two stanchions concealed in the curved entrance wall support at the first-floor level two shallow triple-web compound girders which cantilever forward 5 ft. to support the ends of a deep plate girder buried within the thickness of the front wall. Three superstructure stanchions are carried by this girder, which also serves as the fulcrum for a further system of cantilevers thrown out to support the canopy. The compound girders weigh 9 tons each, and the front-plate girder, 35 ft. long, weighs 10¼ tons. This was carried out by Messrs. Dorman, Long & Co., Ltd.

ELEVATION.—The main elevation was carried out in 2-in. bricks with Empire stone for the basement storey and pilasters, the main cornice being covered with copper.

The general contractors were Messrs. Mullen & Lumsden, Ltd., of Holborn, W.C.1, and the following were the sub-contractors: bricks, Midhurst Whites Brick Co. and Cement Marketing Co.; stonework, Empire Stone Co.; floors and staircases, Caxton Floors, Ltd.; lifts, Waygood-Otis, Ltd.; plumbing, Ellis of Kensington, Ltd.; steel windows, Henley's Metal Windows, Ltd.; terrazzo, Tile Decorations, Ltd.; asphalt, Permanite, Ltd.; heating, Comyn Ching & Co.; ornamental ironwork and canopy, George Wright, Ltd.; lantern lights, Henry Hope & Sons; skylights, Lenscrete, Ltd.; electric clocks and light, Blackburn, Starling & Co.; revolving door, Van Kannel Revolving Door Co.; and copper work, Wm. Ewart & Co.

THE COUNTY HOTEL, WOBURN PLACE, W.C. MR. C. LOVETT GILL, F.R.I.B.A., ARCHITECT.

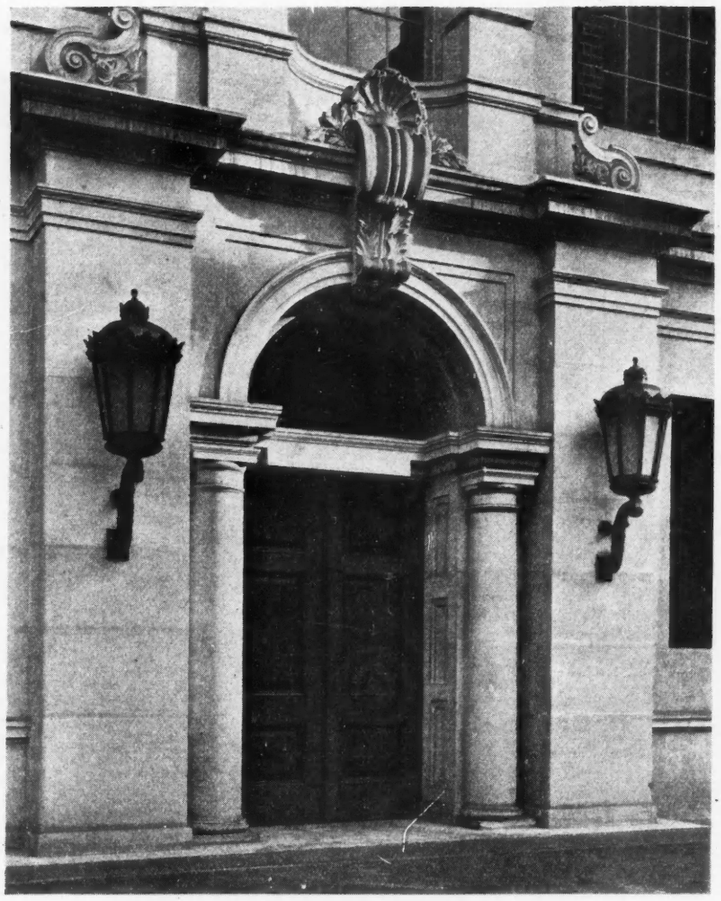
"NORFOLK HOUSE," ST. JAMES'S SQUARE, S.W.1.

MESSRS. GUNTON AND GUNTON, FF.R.I.B.A., ARCHITECTS.

NORFOLK HOUSE, built upon the site occupied by the historic town mansion of the Dukes of Norfolk, has frontages of over 107 ft. to St. James's-square, and of about 70 ft. to Charles II-street.

ELEVATIONS.—Both the elevations are Georgian in style, in harmony with the period houses in this neighbourhood.

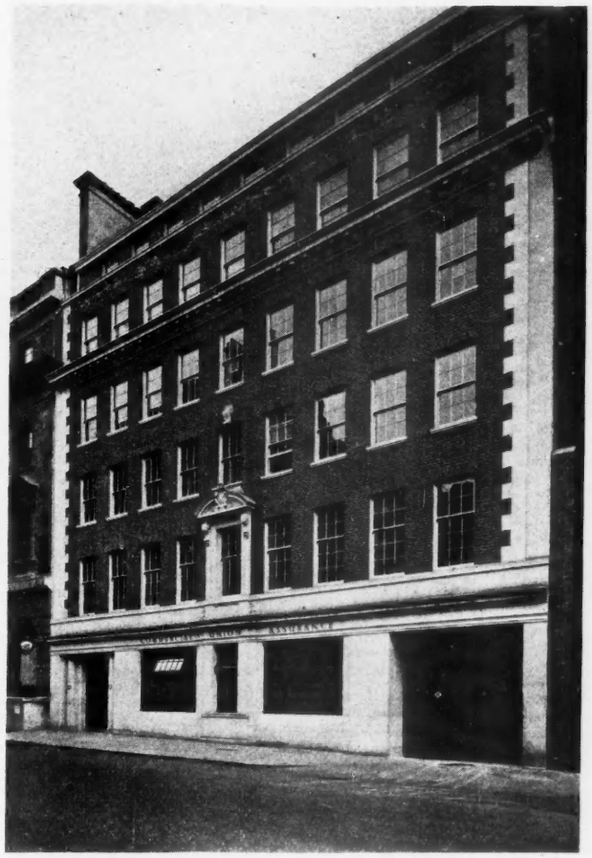
CONSTRUCTION.—The main construction is of reinforced concrete with steel windows to the areas at the rear, and wood sash windows to the main fronts. The building may be entered from either front, from both of which access is given to the upper floors and basement. Both entrance halls are fully panelled in the Georgian style. All the office space has a generous amount of natural lighting. Four high-speed lifts are provided, and an artesian well has been installed. Letter chutes are provided at each end of the building, with a post sorting-room at the St. James's-square end. An air-raid shelter is installed, providing accommodation for all occupants. A garage for 20 cars is provided in the basement.



DETAIL OF MAIN ENTRANCE.

FRONT TO ST. JAMES'S SQUARE.

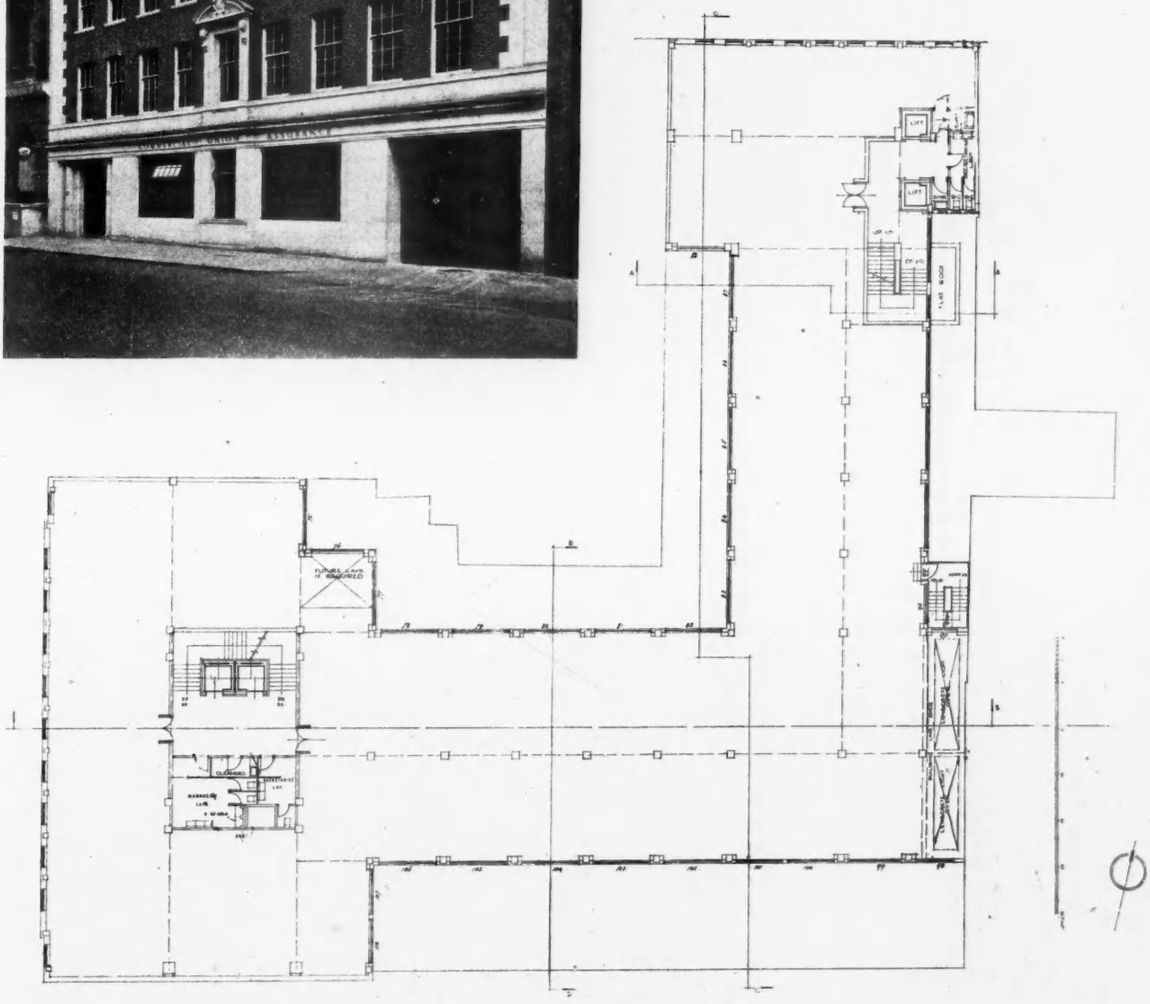
"NORFOLK HOUSE," ST. JAMES'S SQUARE, S.W.1



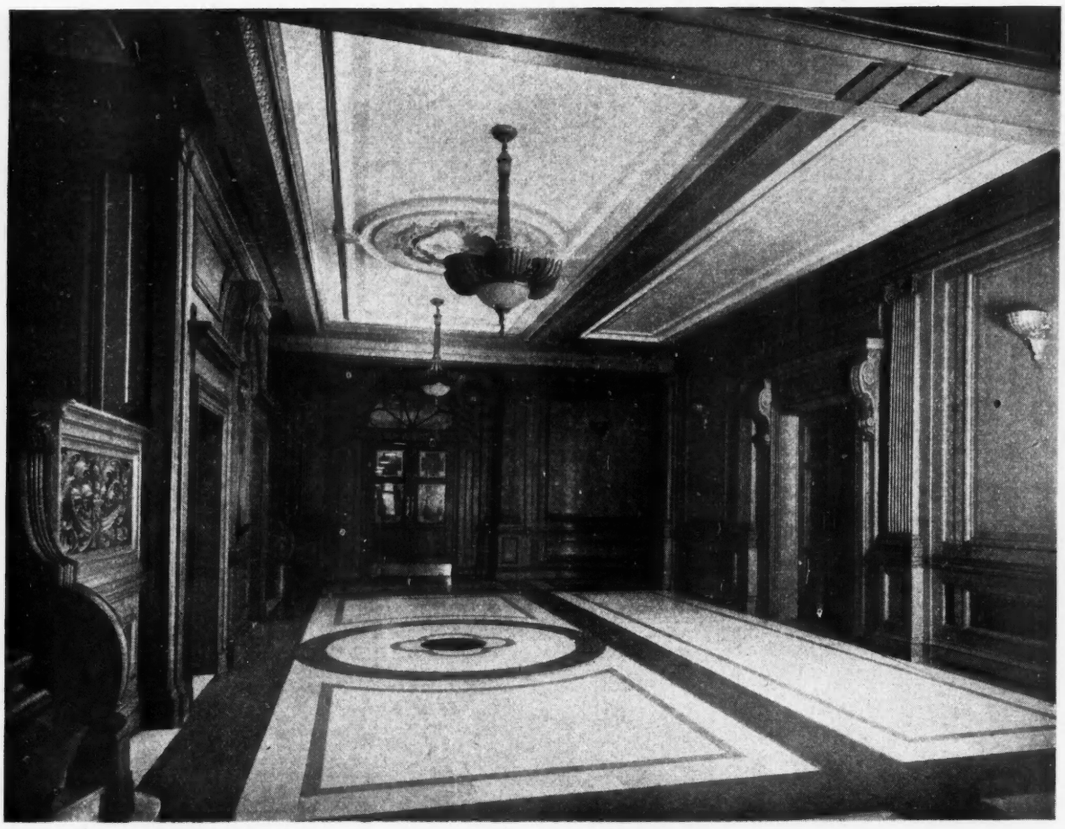
MESSRS. GUNTON AND GUNTON, FF.R.I.B.A., ARCHITECTS.

Left : FRONTAGE TO CHARLES II STREET.

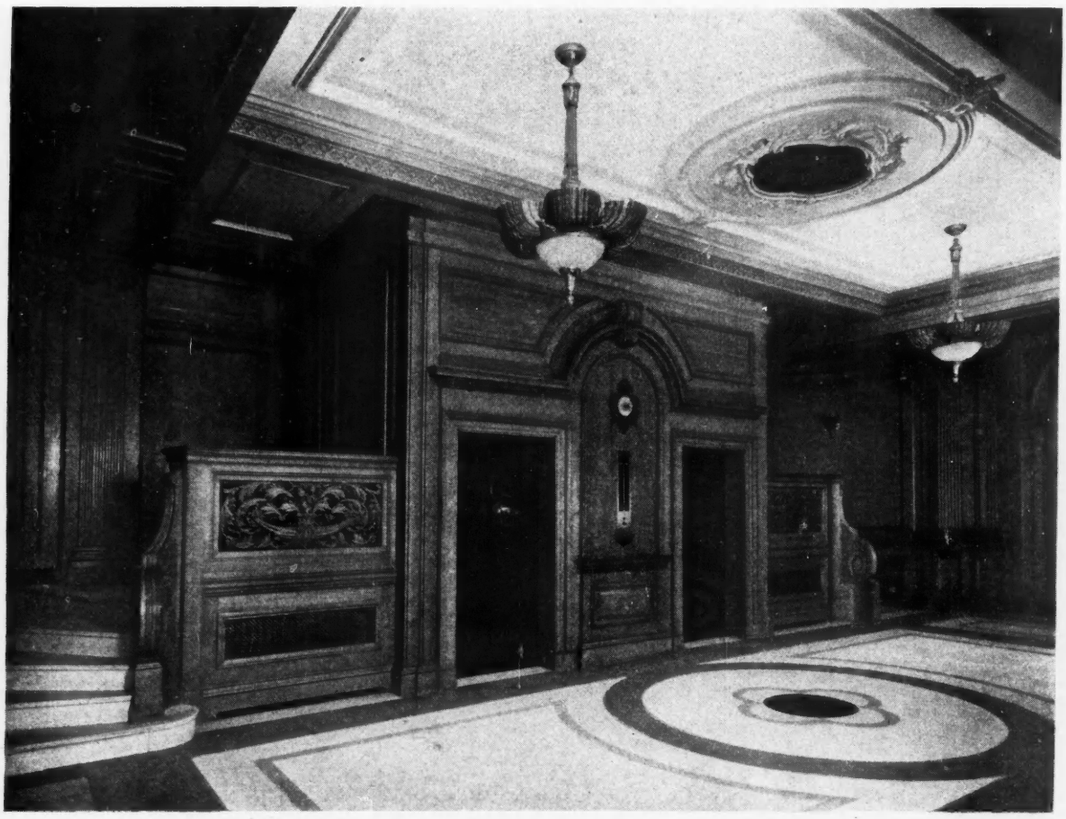
Below : TYPICAL FLOOR PLAN.



The consulting engineer was Mr. W. V. Zinn, B.Sc., and the builders Messrs. F. G. Minter, Ltd. Sir Robert MacAlpine and Sons (London), Ltd., were contractors for the reinforced concrete frame and foundations. Sub-contractors were: Terrazzo, Art Pavements and Decorations, Ltd., and J. L. Whitehead and Co., Ltd.; electrical work, Berkeley Electrical Engineering Co., Ltd.; managers' lavatories (walls and floors), British Vitrolite Co., Ltd.; stone carving, E. J. and A. T. Bradford; ornamental ironwork to elevations and staircase handrails, Bromsgrove Guild, Ltd.; sanitary fittings, Doulton and Co., Ltd.; roofing tiles, Finnis and Ruault; asphalt, General Asphalte Co., Ltd.; copper glazing, A. Goldstein and Co., Ltd.; iron staircase guard rails and roof lights, Haywards, Ltd.; rolling shutter, Haskins; steel windows and roof lights, W. James and Co., Ltd.; wrought-iron gates, Kingsmill Metal Co., Ltd.; letter chutes, Lamson Engineering Co., Ltd.; artesian well, Le Grand Sutcliff and Gell, Ltd.; cast stone, Liverpool Artificial Stone Co.; heating, hot-water and ventilation, Matthew Hall and Co., Ltd.; plastering, W. A. Telling, Ltd.; radiators, grilles, ironmongery, N. F. Ramsay and Co., Ltd.; woodblock flooring, Stevens and Adams, Ltd., and J. F. Ebner, Ltd.; turntable in garage, Francis Theakston, Ltd.; lifts, Waygood-Otis, Ltd.; and panelling, etc., to entrance halls, White Allom, Ltd.



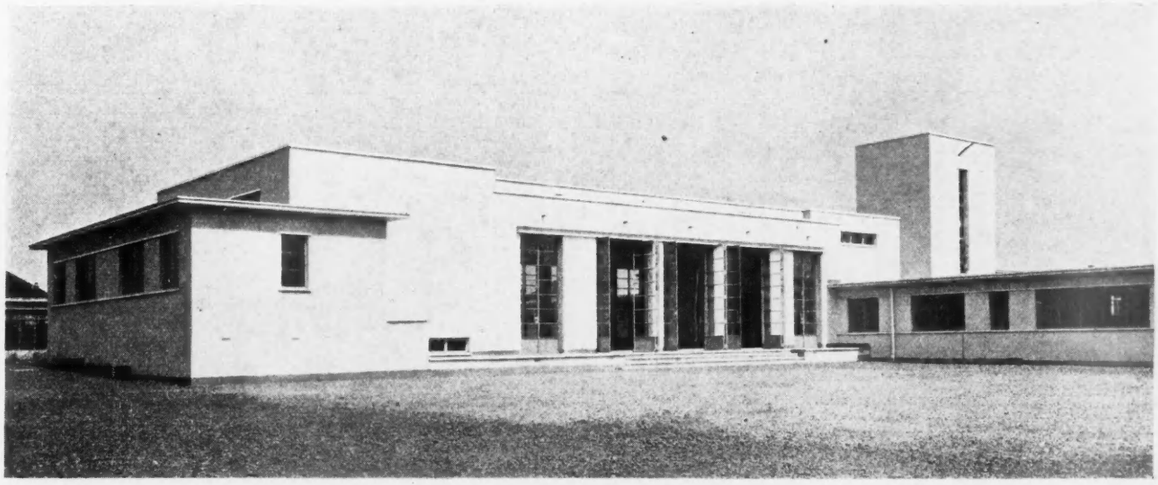
THE ENTRANCE HALL FROM ST. JAMES'S SQUARE.



THE ENTRANCE HALL FROM ST. JAMES'S SQUARE, SHOWING LIFTS.

"NORFOLK HOUSE," ST. JAMES'S SQUARE, S.W.1.

MESSRS. GUNTON AND GUNTON, FF.R.I.B.A., ARCHITECTS.



THE JUNIOR ASSEMBLY HALL.

PARKHILL JUNIOR AND INFANT SCHOOL, ILFORD, ESSEX.

MR. L. E. J. REYNOLDS, M.INST.C.E., BOROUGH ENGINEER AND EDUCATION ARCHITECT, IN COLLABORATION WITH MR. R. C. EDLESTON, A.R.I.B.A.

These buildings have been erected in the newly built-up N.W. district of Ilford. They provide accommodation for 740 children in two distinct sections—the Junior Department, designed for 400 children aged 7 to 11 years, and the Infant Department, for 340 children aged 5 to 7 years. The Infant Department includes space for 50 very young children, generally under 5 years, just beginning their school lives.

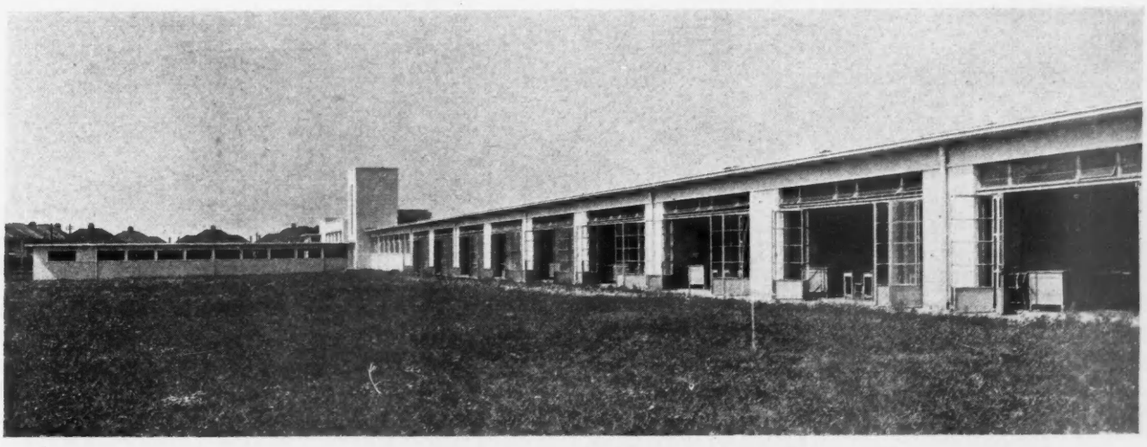
PLANNING.—A single-storey solution of the planning problem was adopted because this seemed best suited to the requirements of small children. The site is one of 6½ acres.

DETAIL DESIGN.—Classrooms are 22 ft. 9 in. by 23 ft. 9 in. by 10 ft. 3 in. high. All face east by south-east and overlook the playing fields. The window wall contains openings 19 ft. 6 in. by 9 ft. 6 in. high, in which the large window units are fixed. The transome at a height of 7 ft. 6 in. divides the window into two parts, the lower sections opening on sliding-and-folding principles, and the upper sections on the gear-operating horizontal-swing principles. In the corridor walls there are horizontal-swing windows at high level, so that adequate control of ventilation can be obtained.

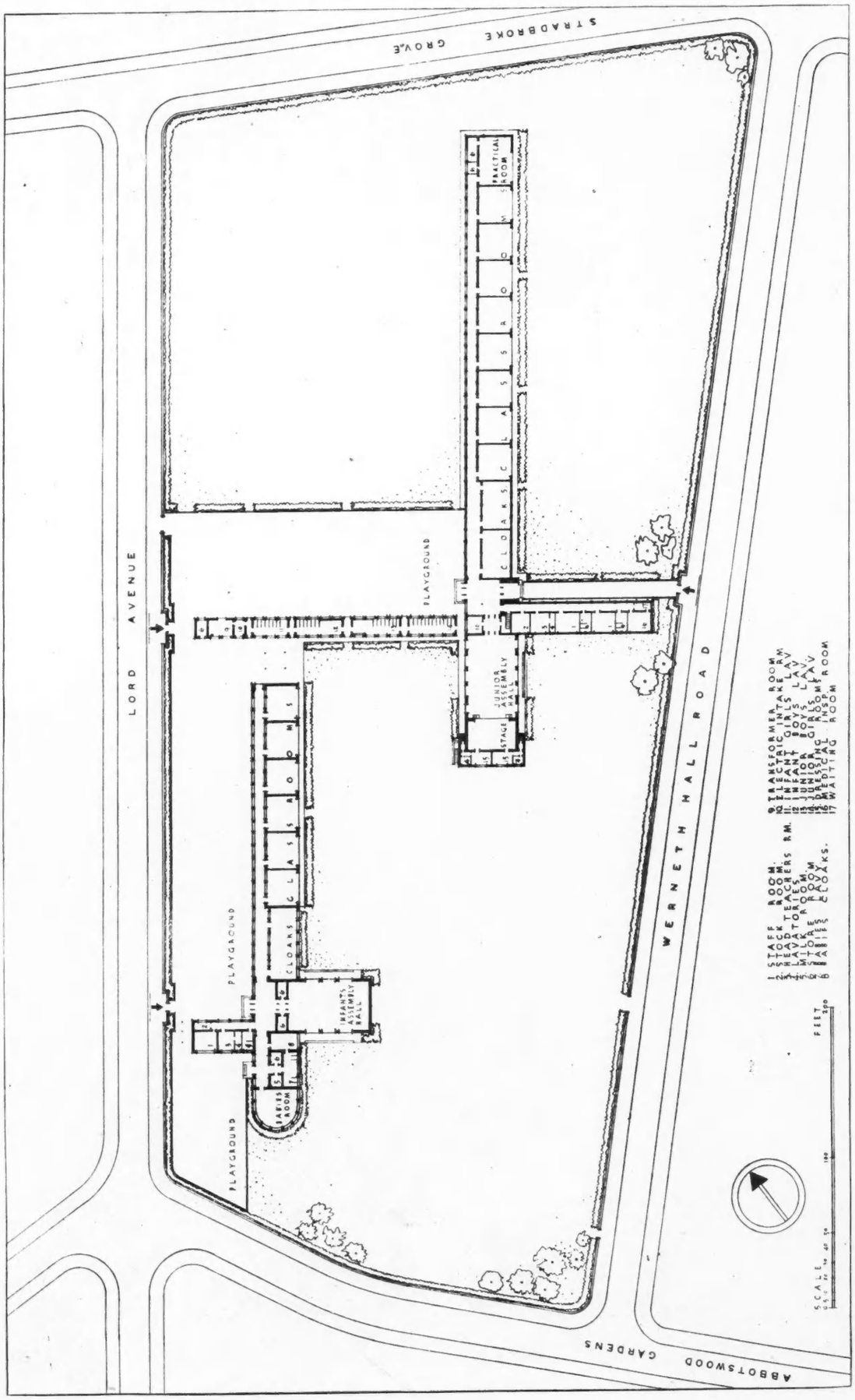
All walls and ceilings are plastered and painted. The floor finish is in Burma "teak-tile," while all skirtings and door linings are of the pressed-metal type. Each classroom contains a built-in cupboard and blackboard fitting, which occupies one end of the room. All the blackboards can be easily turned, and some of the units are lined for special purposes. Wooden, dual-type desks and single chairs have been selected.

Heating throughout is electric, and in the classrooms radiating and convector units are used in combination. Simple cheese-shaped opal glass lighting fittings, four in number and supplied with 300-watt lamps, give excellent artificial lighting conditions at desk level. The finished colour-scheme in classrooms is as follows: Ceilings—half-weight primrose, dead flat; walls—primrose, flat; window metal work and cupboard doors and surrounds—bluebell blue; classroom door—gloss finish; skirtings and door-frame margin—black, gloss finish.

JUNIORS' ASSEMBLY HALL is 55 ft. by 33 ft., with a maximum height of 15 ft. 4 in. A useful stage, 19 ft. 6 in. total depth and carried across the full width of the hall, has a rear screen partition covering access to dressing-rooms at the back which also provide communication between wings. The hall is used for P.T., among other things, and the flanking windows are large in consequence. Maple strip floor is laid on sleeper wall and joist construction.



THE JUNIOR SCHOOL, SHOWING CLASSROOM WING.



PARKHILL JUNIOR AND INFANT SCHOOL, ILFORD, ESSEX : Ground Plan.

MR. L. E. J. REYNOLDS, M.INST.C.E., BOROUGH ENGINEER AND EDUCATION ARCHITECT, IN COLLABORATION WITH MR. R. C. EDLESTON, A.R.I.B.A.

The assembly-hall colour scheme is as follows: Ceilings, upper level—Sing grey, flat; ceilings, lower level—yellow grey, flat; walls—beige, muslin rolled and varnished; columns—beige, graded dark to light; doors and windows—bluebell blue, gloss; and skirtings—indigo blue, gloss. The heating equipment consists of large radiant ceiling flood heaters and inset wall convectors, all of electrical type, thermostatically controlled. The infants' assembly hall is very similar in character, but it has no stage. A simple movable platform is provided.

THE BABIES' ROOM in the infant department is semi-circular in shape, with a continuous window in the curved wall divided by piers. Each unit has two casement lights below the transome and two horizontal-swing lights above it. In the cloakrooms a new method of dealing with coats and shoes has been adopted. Coats and hats are hung on numbered coat hangers spaced at 6-in. centres, clipped to tubular rails in double rows. The rails are supported on inverted U-shaped standards fixed to the floor. A single tubular electric heater at floor level runs down the length of cloak railing and assists the drying of damp coats. Shoes are stored in numbered wooden pigeon-holes, arranged in banks, either placed against the walls, or as separate "islands" near to low fixed forms, on which the children can sit when changing their foot-gear. This arrangement is very economical in its demands on building space.

All crush halls and corridors throughout the building have cork tile floors. The colour scheme for these parts is as follows: Ceilings—cream, flat finish; walls—fawn, flat finish; doors and windows—French blue, gloss finish; and skirtings—black. The corridors and crush halls are not heated, but they are sufficiently warmed by air diffused from the classrooms and cloakrooms.

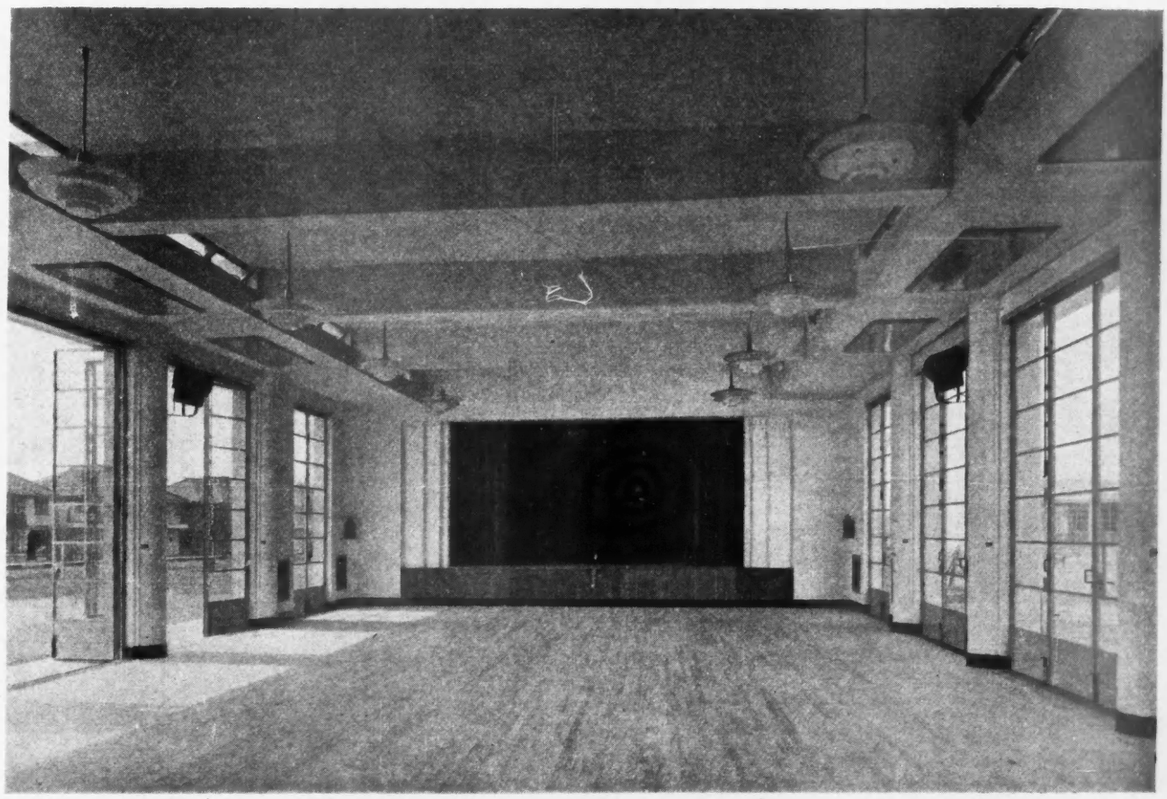
EXTERIOR.—The elevations are simple in character and are a natural outcome of the plan. The walls are finished with ivory-coloured, rough-textured stucco, making a fresh and pleasant contrast against the setting of green playing fields. The flat roofs overhang the walls 2 ft., thus serving the double purpose of protecting the walls from the weather, and the occupants of classrooms from mid-day summer sunshine.

STRUCTURAL.—The building is essentially a brick-built structure, but steel-work has necessarily been used extensively. The walls are constructed of solid fletton brickwork, 9 in. thick throughout, except in the assembly halls, where they are 13½ in. thick. The division walls between classrooms are hollow partitions, built up of two separate thicknesses of 2 in. "Thermacoust" slabs 4½ in. apart, insulated at the edges from abutting structure. Roofs are of pre-cast concrete units and solid r.c. construction of moderate spans, not exceeding 12 ft. The covering is 3-layer built-up bituminous felt.

COST.—The main contract, including fixed furniture, services, etc., was £37,205. The boundary wall, railings and gates amounted to £2,619, and the furniture, £992. The site and roads cost £10,000. Cube contents (exclusive of covered ways) is 497,000 cubic feet.

The building was designed by Mr. L. E. J. Reynolds, M.C., M.Inst.C.E., M.Inst.M. and Cy.E., Borough Engineer and Architect to the Education Committee, in collaboration with Mr. R. C. Edleston, A.R.I.B.A., a member of his architectural staff, to whom the project was entrusted. The clerk of works was Mr. Arthur N. Sherring, B.Sc., M.Inst.Struct.E.

The general contractors were Messrs. Taylor Woodrow Construction Co., Ltd., of Southall, Middlesex. Sub-contractors and suppliers are on page 83.

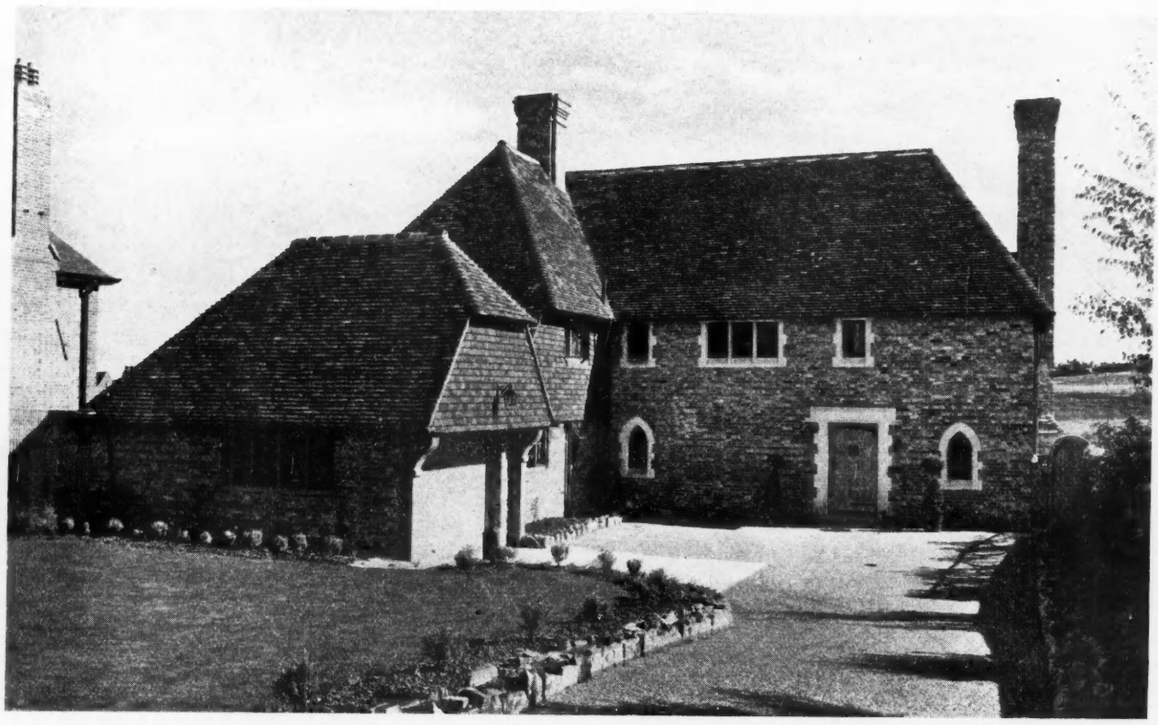


THE JUNIOR ASSEMBLY HALL, LOOKING TOWARDS STAGE.

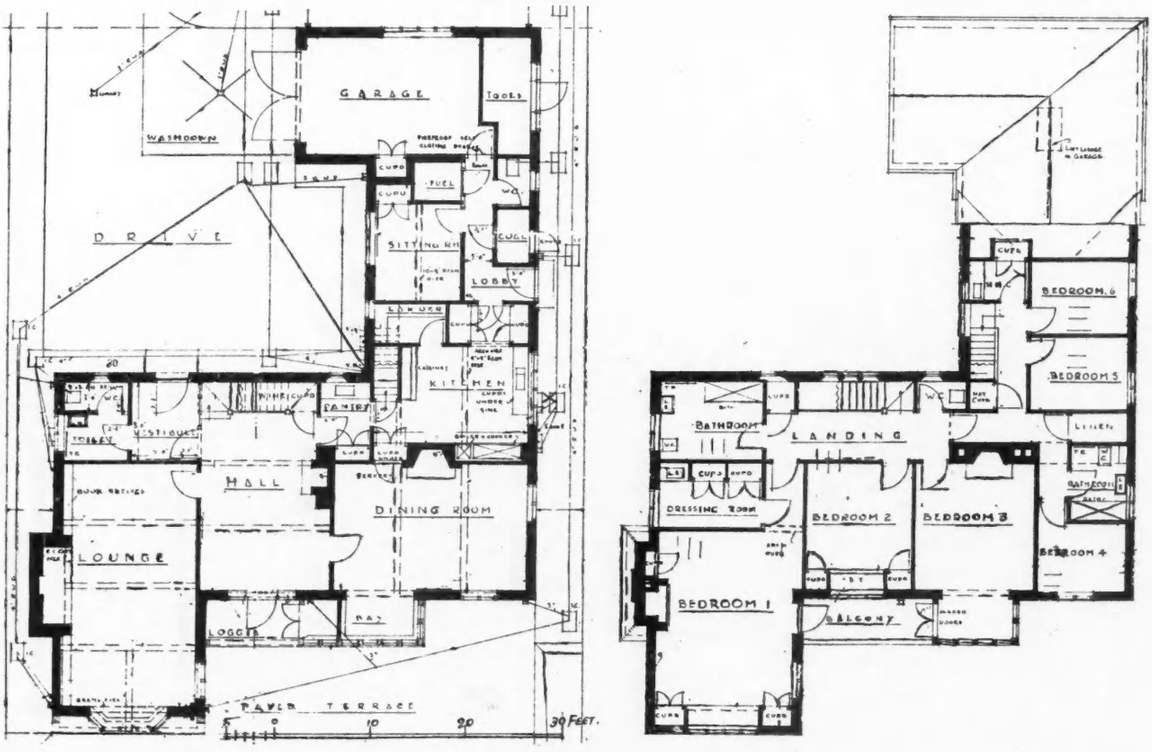
PARKHILL JUNIOR AND INFANT SCHOOL, ILFORD, ESSEX.

"LYCETTS": A HOUSE AT EASTBOURNE, SUSSEX.

MR. ALWYN UNDERDOWN, F.R.I.B.A., ARCHITECT.



THE ENTRANCE FRONT.



PLANS.

Erected in Old Camp-road, Eastbourne, this house was designed for Mr. G. L. Lycett. The external bricks were old second-hand ones of pleasant tone, the tiles being second-hand also. Joinery is of Austrian oak. Windows were supplied by Messrs. Humphrey, Jackson & Ambler. Plastering throughout is self-coloured with natural surface. The builders were Messrs. Lovells, of Mill-road, Eastbourne.

A.R.P.

Concrete Construction for

Shelters • Dug-Outs • Basements, etc.

Requirements	Specification
Waterproofing, Increased Strength, Rapid Hardening.	For Mass Concrete incorporate 1 part of "Colemanoid" No. 1 integral liquid proofer and hardener in every 15 parts of water in the concrete mix (approx. 1¼ galls. per cubic yard). For Renderings incorporate 1 part of "Colemanoid" No. 1 in every 10 parts of water in the mortar mix (approx. ¾ gall. per 10 yards super of rendering ¾" thick).
Protection of Sandbags, Permanency of Shelters.	Cover the sandbags with waterproof paper and encase with about six inches of reinforced concrete, waterproofed as above.
Visibility.	Paint a band 1 foot wide round entrances, using "Ellicem" tenacious cement coating, EA101, strong white.
Reduction of Condensation.	Where shelter is lined with brick, concrete or plaster, paint same with two coats of "Ellicem" tenacious cement coating EA 101.
Prevention of slipping in entrance ways.	Incorporate "Alundum" non-slip aggregate in the floor topping. Where the slope is unusually steep lay "Alundum" non-slip floor tiles.
Shock-resistant bond between Concrete & Plaster.	Treat the shuttering with "Redalon Liquid" before pouring the concrete and brush off the retarded surface cement when striking the shuttering.

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Technical information concerning them, also "Bull Dog Floor Clips," "Atlas White" and "Adamite" Mixture, is always available by post. If necessary an appointment can be made for a technical representative to call.

Cecil Kahn

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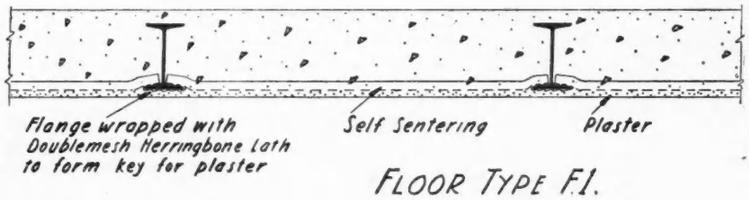
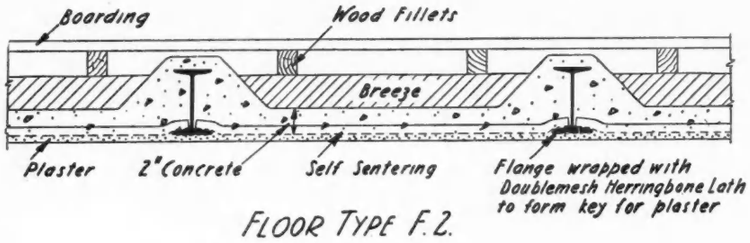
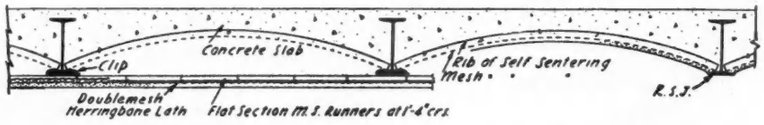


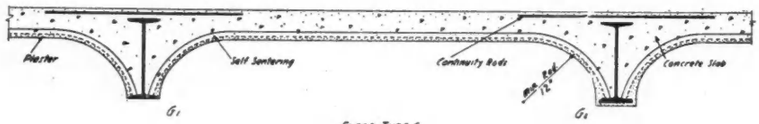
FLOOR TYPE F.1.



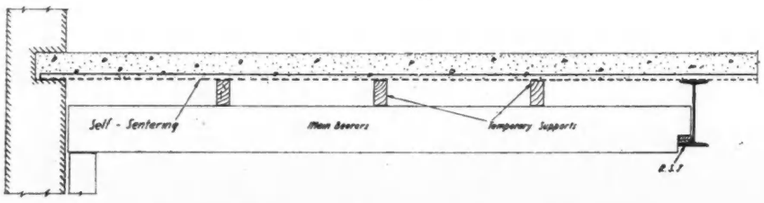
FLOOR TYPE F.2.

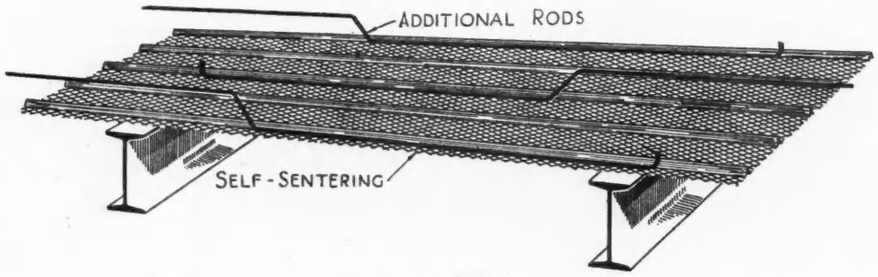


FLOOR TYPE A



FLOOR TYPE G





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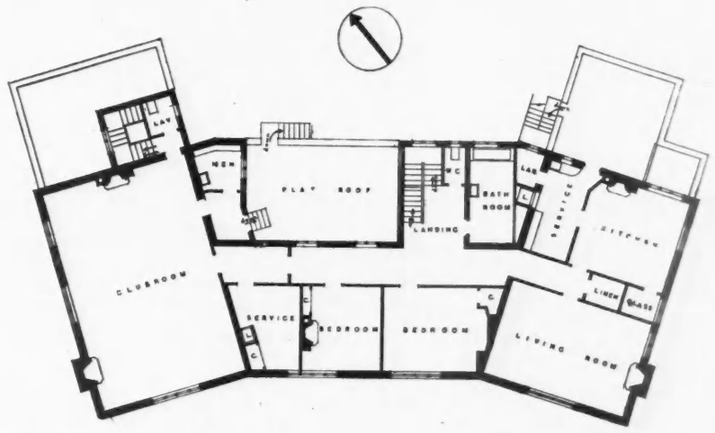
THE "BAT AND BALL" INN, CHURCHDOWN, GLOUCESTERSHIRE.

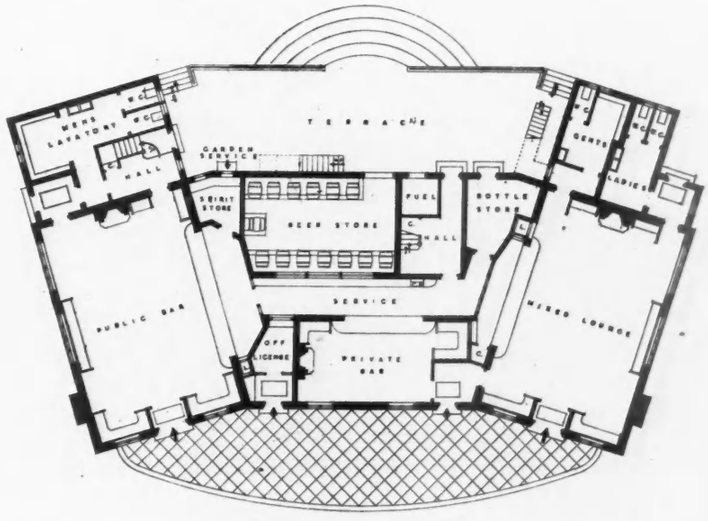
Just completed for Messrs. Flower's, Brewers, of Stratford-on-Avon, this attractive public-house takes the place of an out-of-date building called "The Old Elm." It comprises three bars for the public, all of which are supplied by the same service, which has easy access to the various stores and off-licence. The beer store, which is on the ground floor instead of a cellar, is thermostatically heated by electricity and cooled by an automatic cooler so that the temperature of the store, and of course the beer, is always the same. The roof of this store is of reinforced concrete, and the walls, ceiling and doors are all cork-lined.

The first floor has a good flat for the manager's use and also a club-room which is used for R.A.O.B. meetings. The three ground floor bars have different treatments, the mixed lounge being especially noteworthy, as it is decorated by paintings by F. H. Warren, of Stratford-on-Avon, representing the legends and history of Churchdown—the devil pulling down the church as fast as the monks were building it; Sir Walter Raleigh digging his first potatoes; and the monks from St. Oswald's, Gloucester, expressing the theme "And make thy chosen people joyful."

The general contractors were Messrs. A. C. Billings and Sons, Ltd., of Cheltenham. The bars and woodwork were carried out by the Cheltenham Shopfitting Co.



FIRST FLOOR



GROUND FLOOR

SCALE OF FEET

MESSRS. L. W. BARNARD & PARTNERS, FF.R.I.B.A., ARCHITECTS.

THE PRIVATE BAR.

THE MIXED LOUNGE.

THE "BAT & BALL" INN, CHURCHDOWN, GLOUCESTERSHIRE.

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Wet
Air Raid Shelters

can soon be made

dry and waterproof

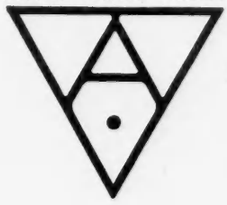
by the use of

"Colemanoid" No. 1

Generally speaking, it is much easier to make concrete shelters or any other underground structures waterproof at the time of construction, but even so, it is quite possible and usually fairly simple to do so at a later day when water has started to seep through.

May I try to advise you on any such problems which you may have on hand?

REGD. TRADE MARK



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Flats, Birmingham	*Messrs. Mitchell & Bridgewater, FF.R.I.B.A., and Messrs. Gollins & Smeaton, AA.R.I.B.A.*
Social Centre, Messrs. Kodak	*Messrs. F. J. Wills, F.R.I.B.A., & Son.*
Flats, Mapesbury Rd., Brondesbury	*Victor Kerr, Esq., F.R.I.B.A.*
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Flats, "Becklow Place"	*Hammersmith Borough Council (F. Douglas Barton).*
3 Aerodromes	*Air Ministry.*
3 Militia Camps	*War Office.*
Army School of Cookery	*War Office.*
Mechanical Workshops	*War Office.*
Air Defence Stations	*War Office.*

SURFACE AIR RAID SHELTERS FOR THE CITY OF WESTMINSTER.

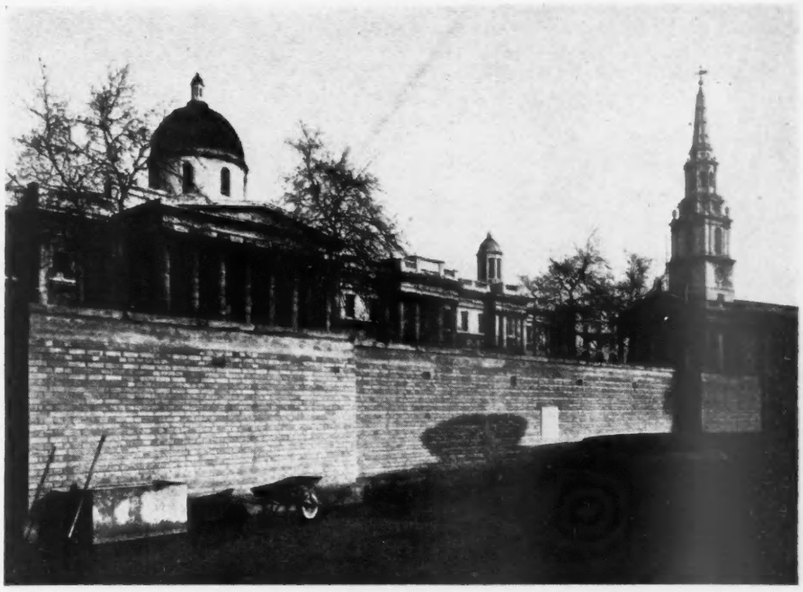
MR. J. RAWLINSON, M.ENG., M.INST.C.E., CITY ENGINEER AND SURVEYOR.

MESSRS. COLLCUTT & HAMP, CONSULTING ARCHITECTS.

A COMPREHENSIVE shelter scheme carried out by the Westminster City Council is now nearing completion. The scheme includes the use of basements and other existing structures, as well as the construction of trenches and, where these are not practicable, of surface shelters. The first step taken was to survey all the basements in the city, numbering about 14,000, and to classify them according to their suitability as shelters. Those constructed of steel and concrete, and needing no structural alteration, were designated as "Class A." "Class B" basements were those of strong brick or similar construction which with some modification would be suitable for the purpose.

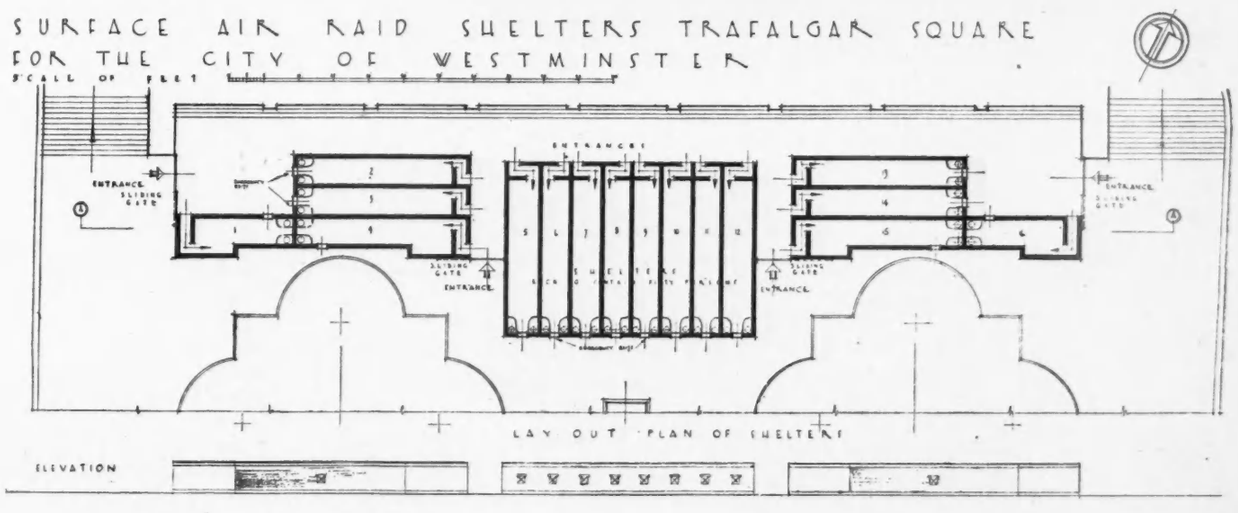
Meanwhile a census was taken of the number of persons likely to be in the streets at any one time in the various parts of the city, so that the protection available in basements might be supplemented where necessary. Supplementary accommodation was provided where possible by the use of existing structural features such as the Adelphi arches and the arches under Charing Cross Station. Where possible, further accommodation was provided by the digging of trenches in open spaces.

There remained, however, a certain number of people likely to be in the streets at peak periods, for whom shelter accommodation could not be found by any of these means. For these it was decided to provide surface shelters according to the Home Office specifications, and such shelters have now been completed at Parliament-square, Trafalgar-square, Hanover-



VIEW OF TRAFALGAR SQUARE SHELTERS, WITH ST. MARTIN'S BEYOND.

VIEW OF TRAFALGAR SQUARE SHELTERS, LOOKING WEST.

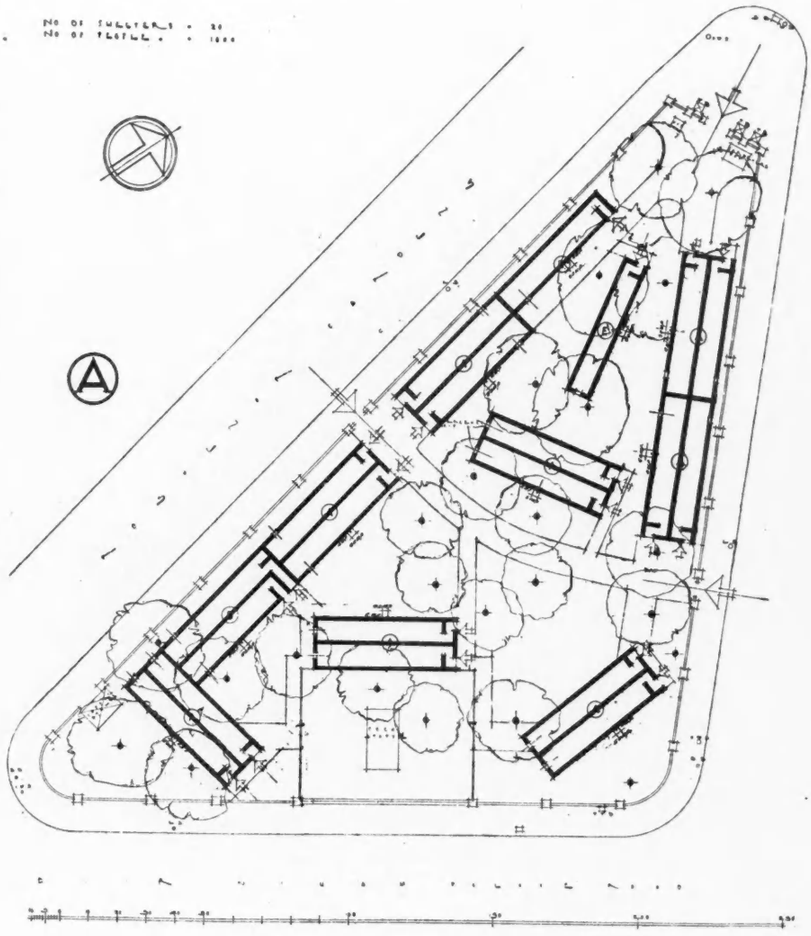


square, and in the immediate neighbourhood of Victoria Station. These form the final portion of the scheme.

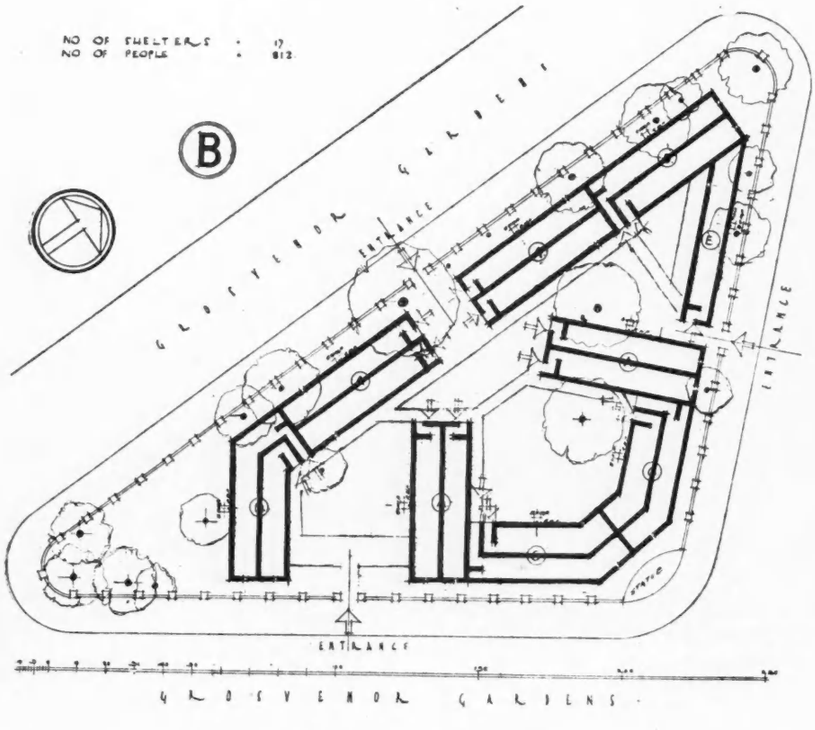
The surface shelter at Trafalgar-square has been erected to supplement the accommodation provided by the arches under Charing Cross Station, foot traffic being particularly heavy at all times in that neighbourhood. It is situated on the north side of the Square between the road and the new fountains, at present being placed in position, additional protection being afforded on its north side by the elevation of the road, which at this point is 15 ft. above the pavement of the Square.

The shelter will accommodate 800 people in 16 compartments, and will provide protection against blast and splinters. The plan is given on page 69. The walls are of brickwork 14 in. thick, " Dunbrik " dun-coloured bricks being used for the outside courses in order to harmonise as far as possible with the surroundings. For the inside courses flettons are used.

The walls are founded on reinforced concrete ground beams 1 ft. 9 in. wide, laid directly on the pavement, it being considered that the pavement is sufficiently strong to support the load when distributed by the ground beams. The pavement thus forms the floor of the shelter. Ramps will be provided over the beams at the entrances. In the case of shelters of the same type elsewhere, excavation was necessary for the foundations.



GROSVENOR GARDENS SHELTERS, SCHEME A.



GROSVENOR GARDENS SHELTERS, SCHEME B.

The roof is of reinforced concrete 6 in. thick, surmounted by a bituminised covering and surrounded by a coping. Emergency exits of the usual design recommended by the Home Office are provided in each compartment, comprising a square opening surmounted by a reinforced concrete lintel and covered by steel doors fixed by bolts. Lavatory accommodation is provided by chemical closets screened by curtains.

Work was begun on the Trafalgar Square shelter about the middle of November, and it is now complete. This shelter has been built by Messrs. Harry Neal, Ltd., of Baker-street, W., whose general foreman was Mr. Puttock. Other firms engaged on the remaining shelters are Messrs. Gee, Walker and Slater, Ltd., and Messrs. J. W. Falkner and Sons, Ltd.

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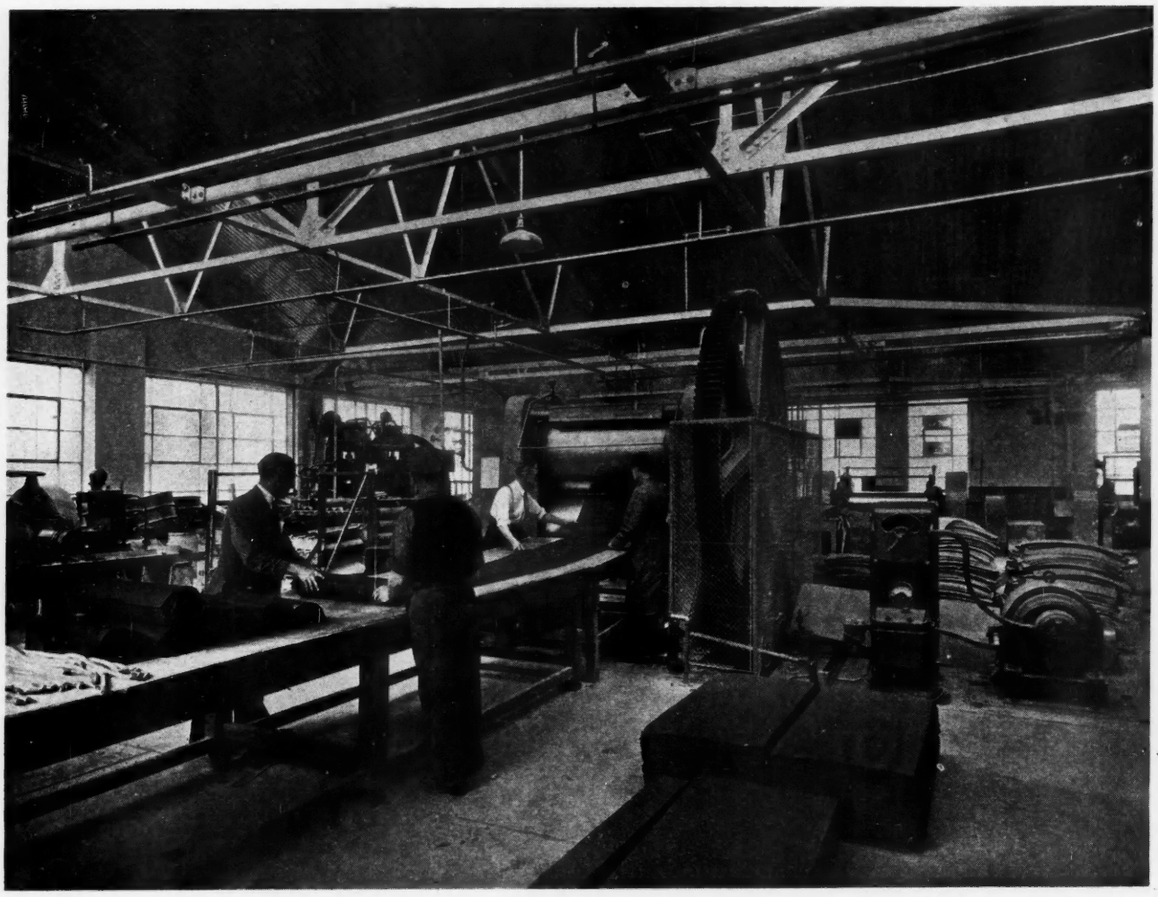

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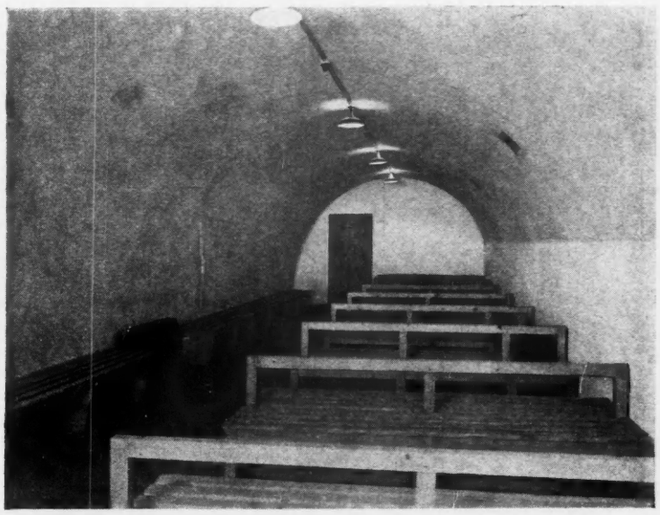
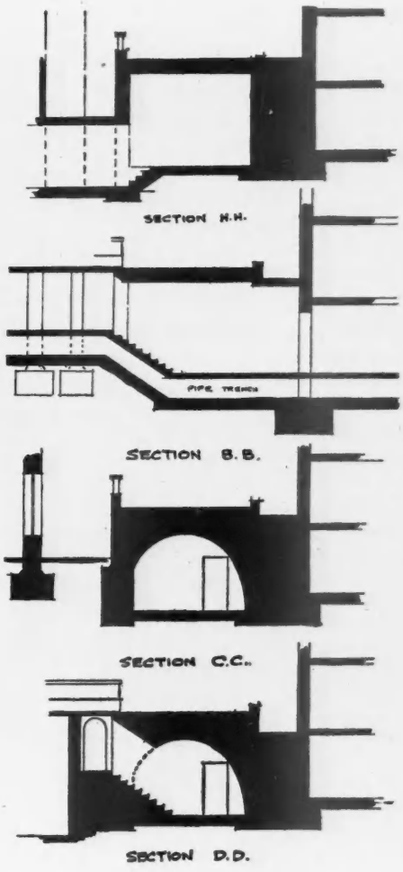
STAFF AIR RAID SHELTER, ST. MARYLEBONE TOWN HALL.

SIR EDWIN COOPER, R.A., ARCHITECT.

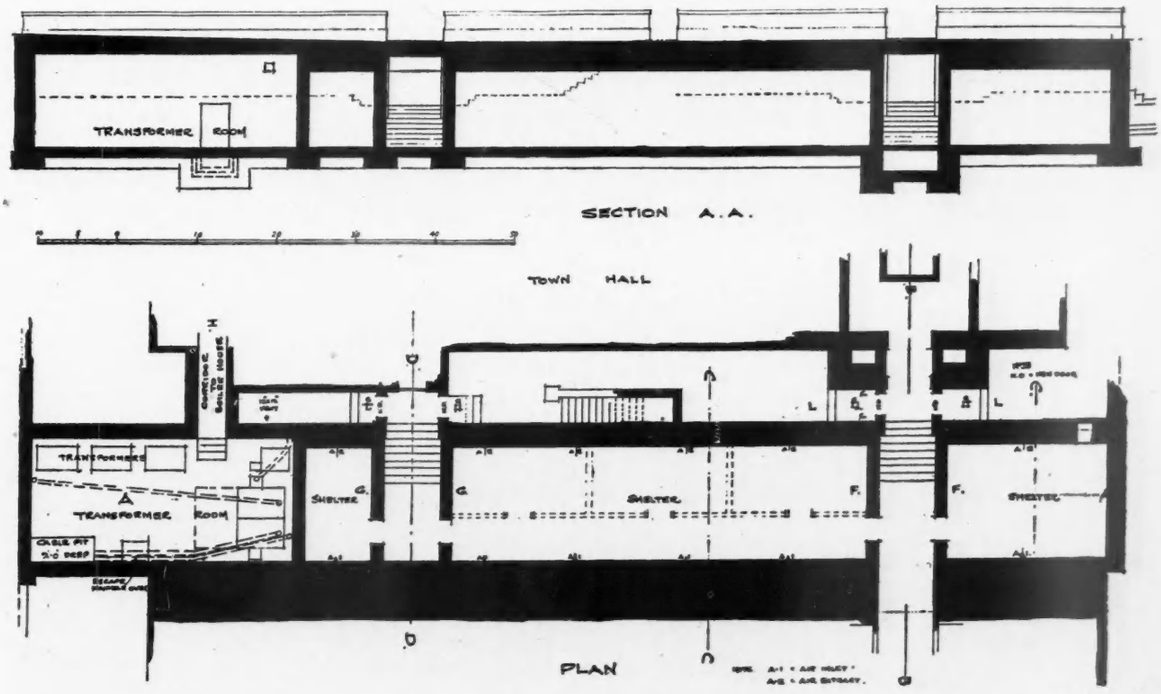


VIEW IN SHELTER.

This structure forms part of the new extension to the Town Hall and has been designed to provide a transformer room and three compartments for storage accommodation, these latter to be used as air raid shelters for the Town Hall staff in time of emergency. It is situated under the private way between the Town Hall and the New Extension and has a connecting corridor between these buildings easily accessible from all parts of the same. The construction generally is of concrete with the necessary reinforcements. Lighting, heating and ventilation suitable for all purposes are provided. The contractors are Messrs. Stewart and Partners, Ltd., and the sub-contractors are Higgins and Cattle, Ltd., Mumford Bailey and Preston, Ltd., Lawfords and Seco, Ltd., Haywards, Ltd., and the Dover Engineering Company. The architect is Sir Edwin Cooper, R.A., who designed and carried out both the Town Hall and the New Extension.



CROSS SECTIONS.



Below : PLAN. *Above* : LONGITUDINAL SECTION.

VENTILATED SHELTERS FOR AN ENGINEERING COMPANY.

THE design and equipment of the air raid shelters recently constructed at the Carrier Engineering Company's factory include a number of interesting features which are the result of extensive experience in this class of work.

The largest shelter (which is described and illustrated in these pages) provides accommodation for 250 people, and is of the ventilated basement type. The company were themselves responsible for the conception of the scheme, the object of which was to provide protection from practically everything except direct hits by explosive bombs.

DESIGN.—The structure is of reinforced concrete, cast *in situ*, and additional protection is provided by supporting the whole of the roof area by steel troughing, carried on vertical steel stanchions.

Reference to the plan will indicate the general arrangement of the three branches. The centre branch is equipped as a first aid and decontamination section, whilst the two main branches provide seating accommodation. The point at which the three branches converge forms the control room for the whole shelter and factory A.R.P. organisation.

This central control room is isolated from the three branches by rubber-seated gas-tight steel doors, these being manufactured by the company. Similar gas and splinter-proof doors are also fitted at the air-lock entrances to the two main branches and to the decontamination section. In all, three emergency exits are provided in the roof, one of which is located above the control room and one above each of the main shelter branches.

VENTILATION.—Ventilation and gas filtration are provided by three Carrier gas defence units. This equipment is designed to meet Home Office requirements, and is manufactured under H.O. Licence No. 1. Each filtration plant can be used either for ordinary ventilation or for the filtration of poison gas. Normally this equipment is driven electrically, but in the event of power failure it is possible to maintain ventilation or filtration by operating the units manually. The advantage of the type of filter employed in these units is that it is designed to be 100 per cent. efficient against all known war gases, including particulate smokes. This efficiency is unimpaired by weather conditions and the filters are also impervious to oil fuel bombs.

Evacuation or pressure relief valves are provided in the inner and outer air-lock walls to ensure that an internal pressure slightly greater than that of the atmosphere is maintained inside the shelter. These valves also control the directional movement of the air which flows outwards from the accommodation branches of the shelter through the air-locks to atmosphere. Chemical latrines are provided outside the two main branches, and are located in the air-locks, which are of generous proportions. It will be realised that the control of the air movement is an important consideration in this connection.

DRAINAGE.—A drainage system is provided for the collection of all water from shower baths and wash basins, this being taken to a sump which is drained by an electrically driven pump, controlled automatically by a float control. Semi-rotary hand pumps are provided for the same purpose in the event of power failure.

SITE.—The site originally presented many difficulties in connection with drainage, as the shelter at its nearest point is only 70 ft. from the Grand Union Canal, the water level of which is approximately 10 ft. above the top of the shelter. The structure is, however, perfectly watertight, although no asphalt was used in the construction, and owing to the efficient drainage, heating and ventilation arrangements, there is no trace of internal condensation or moisture. As a result it has been possible to distemper the walls, which, together with the floors and roof, are perfectly dry.

The decontamination and first-aid section previously mentioned is arranged for the separate accommodation of male and female patients. Each section is provided with full decontamination equipment, shower baths, hot and cold water supply, and secondary drinking water supply, in addition to comprehensive first-aid arrangements. The secondary drinking water supply is available in each branch, and a third reserve water supply is also installed.

CONTROL ROOM.—The control room is provided with a separate G.P.O. telephone, and in addition a telephone connecting with the main factory switchboard. Signal lights are included in the control panel, and register calls from the internal shelter telephone system, which enables the control room to keep in touch with each branch of the shelter and with the main entrances. Auxiliary lighting is provided for the whole shelter, the change-over switch being located in the control room. The opening and closing of all doors and emergency escape hatches is recorded by a further group of lights on the control panel, and an additional group indicates whether or not the air filtration units are in operation.

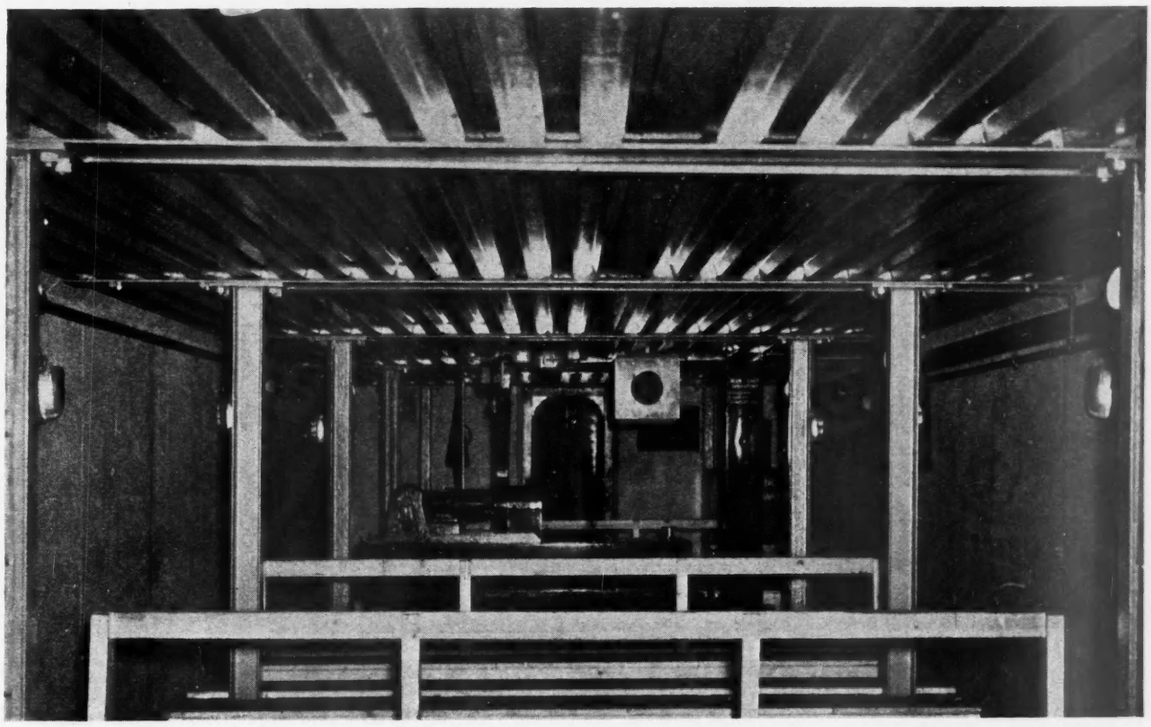
A microphone is installed in the control room for the purpose of relaying announcements and instructions to loud-speakers located in the various branches of the shelter. It is also possible to relay gramophone records to the same loud speakers or to connect these to a standard wireless receiving set.

The emergency equipment provided includes an oxy-acetylene cutting plant, fire-fighting appliances, and a comprehensive selection of tools.

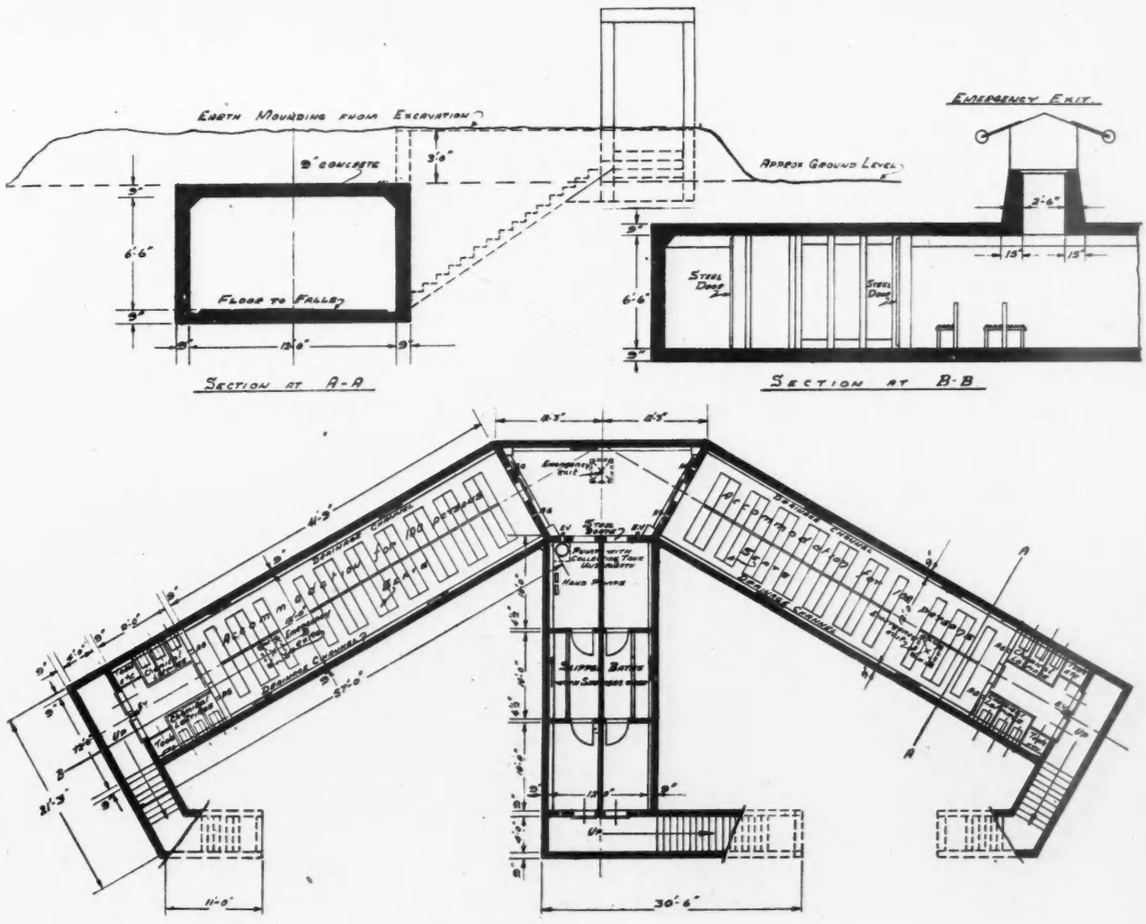
The work was executed to the design of the Carrier Engineering Company, Ltd., by Messrs. Ward and Paterson, of Westminster, and the poison gas filtration plant, steel doors and auxiliary equipment were manufactured and erected by the owners.

AN EMERGENCY EXIT

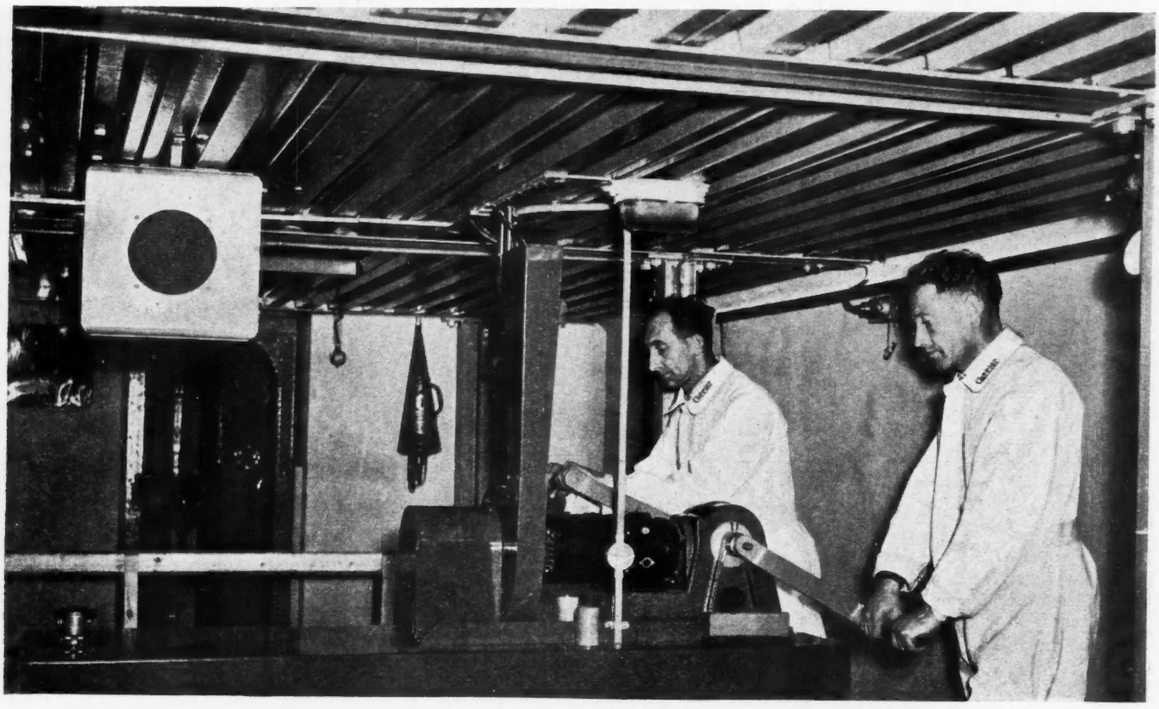
VENTILATED SHELTERS FOR AN ENGINEERING COMPANY.



VIEW IN ONE OF THE WINGS.



PLAN AND SECTIONS A-A AND B-B.



VIEW SHOWING OPERATION OF MANUALLY-OPERATED VENTILATION PLANT.

LOOKING INTO THE CENTRAL CONTROL ROOM.

VENTILATED SHELTERS FOR AN ENGINEERING COMPANY.

AIR RAID SHELTERS IN BAD GROUND

THE PROBLEM OF WATERPROOFING

By W. S. GRAY, B.A., A.M.Inst.C.E.I.

In good impervious clay or dry sand or gravel there is little difficulty in constructing an air-raid shelter which will be dry inside, provided that the entrance of surface water is stopped by building a raised sill at the bottom of the ramp or steps leading down to the shelter. Unfortunately, this class of subsoil is uncommon in some districts; the clay may be mixed with sand (or contain seams of sand) and therefore permeable; the sand or gravel may be water-bearing. Alternate layers of dry clay and water-bearing gravel may also be encountered in excavation and cause special difficulties if their existence was unknown at the time when the design was made. It is for this reason that trial holes are made on the site before designing the structure, since the side and upward pressures on the walls and floor respectively will be very different if the ground is dry clay or waterlogged gravel. In dry clay, for instance, the side pressure on the walls may be about 25 lb. per square foot at a depth of 1 ft. below the surface, whereas in waterlogged gravel the corresponding pressure will be, perhaps, three times as much.

It is, therefore, evident that it is not enough to design the walls by rule of thumb, making the thickness, say, 9 in. and neglecting to reinforce them, unless one is sure that the ground is a good dry clay. It is partly for this reason that shelters are frequently found to allow water to accumulate inside. The walls and floor are unable to resist the inward or upward pressure, with the result that they crack and permit water to enter. If the workmanship is poor, failure of this kind is all the more certain. Even if the concrete does not crack badly, there is a risk of numerous small cracks occurring because precautions have not been taken to prevent excessive shrinkage. Too much cement in the concrete and rapid drying out of the concrete, because it is not protected against the effects of wind or sun, are common causes of shrinkage.

If it were not for the increased danger of shrinkage stresses, the use of very rich concrete made with ordinary Portland cement would be the cheapest form of waterproofing. The special waterproofing cements which are now obtainable overcome this difficulty, and have the added advantage that they give the benefit of the addition of other materials with the certainty that the addition is uniformly distributed throughout the mass. It would be a mistake, however, and very unreasonable, to assume that a special cement can be used with good results if the mix is too lean, the aggregates dirty or badly graded, or the workmanship careless.

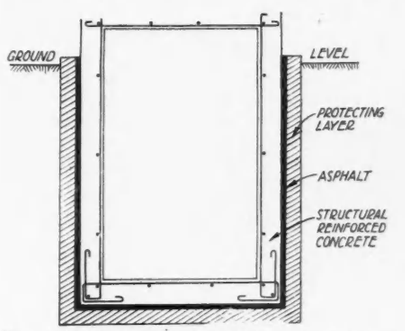


FIG. 1.—TYPICAL SECTION THROUGH REINFORCED CONCRETE *In situ* SHELTER.

Construction of a watertight shelter in waterlogged or very wet ground can never be cheap, and every effort should be made to obtain an alternative dry site or to build a type of shelter which requires the least possible depth of excavation. So far as possible the underside of the floor slab should never be below the level of the permanent water in the ground if the cost is to be kept low. But if this is impossible for any reason, it is highly important to design the shelter to resist the water pressures, and to construct it on the principle of the tanked basement (Fig. 1), unless the site can be drained by lowering the existing water level to such an extent that the side pressures are due to dry soil only and construction can be done "in the dry."

Repairs to Existing Shelters.

The remarks which follow refer to cases in which the ground has unexpectedly proved to be wet or hidden springs have been found in the excavation. These, it may be said, are seldom revealed by trial holes. In fact, one sometimes wonders whether trial holes have an inherent knack of missing springs!

There are two sources of trouble, namely, dampness and actual percolation or flow of water through the concrete. Both may affect the walls only or the walls and floor, and different remedies are described to suit either case and the extent of the area that is not watertight. It must be remembered that repairs to a structure which has proved to be unable to prevent water passing through it are always expensive if a positive and certain cure is demanded. The less costly methods, on the other hand, never can ensure certainty, and are sometimes a source of expense without providing a cure.

Treatment of Damp Walls.

If the inside of the walls of the shelter are only damp, and water is not actually trickling through, satisfactory results may sometimes be obtained by applying one or more coats of waterproofing liquid or molten solutions on the inner face of the wall. This method has the great advantage of being cheap and its use avoids the cost of excavating round the shelter, but it cannot be guaranteed as a certain cure. Because the coating is applied on the inside it can never be fully effective, since the water pressure—even though this may be very small—tends to push the coating off the walls. Since dampness is primarily due to the existence of very small capillary openings or pores extending through the wall which afford a passage for water, it can be cured by stopping up these passages.

A well-known method is to paint silicate of soda (waterglass) on the face of the wall. Two or three coats, each diluted with about four parts of water to one of waterglass, are generally used. Waterglass combines with the free lime in concrete to form an insoluble calcium silicate and sodium oxide, and the latter combines with the carbon dioxide in the air to form sodium carbonate as an efflorescence on the wall.

An alternative is the process in which alum and soap solutions are applied in turn to the wall. The alum solution consists of 2 oz. of alum in a gallon of hot water, and the soap is mixed in the proportion of 12 oz. to a gallon of hot water. Both are brushed into the wall, and the solutions should be maintained at a temperature of about 100 deg. Fahr.

Fluates or silico fluorides, of which the best known is magnesium silico fluoride, are also used as waterproofing solutions. Since these solutions are highly acid, workmen applying them should wear rubber gloves. If, as frequently happens, they are sprayed on the wall, gas-masks should be worn by the workmen.

When the openings in the wall are larger than capillary size, or when there are serious shrinkage cracks, the preceding solutions are no longer suitable, and the openings are more effectively sealed by paraffin wax, bituminous paints, or asphaltic liquids. These may be applied hot or cold. If molten paraffin or bitumen is used the surface of the concrete requires to be dried by heating with a blowlamp. It is also important to apply the coating in such a way that the waterproofing skin is continuous over the whole area of the wall.

There are many excellent proprietary waterproofers on the market which can be used. These have the advantages of being of first-class materials and of being in a form ready for immediate use.

More Serious Leakage Through Walls.

When there is actual percolation of subsoil water through the walls of the shelter, the only remedy that is really effective is to open up the ground outside the walls and allow the walls to dry until an asphalt coating or a layer of bituminous sheeting can be applied all over the outside of the walls. In this case, also, continuity of the waterproofing skin is essential. If sheeting is used, it is good practice to lap the joints about 6 in.

Multiple-ply tarred or asphalted building paper is used as waterproofing in the following manner: On the dry concrete hot tar or asphalt is mopped on, and the paper from the first roll is spread over this, keeping the tarring just in advance of the paper, so that the latter is always spread on the hot liquid. As the first roll of paper is pushed along and tarred down, another roll is started to overlap it. This is pressed into the hot tar on top of the first layer of paper, and so on until the requisite number of plies is laid.

When waterproofing the outside of the wall it is necessary to give the workmen

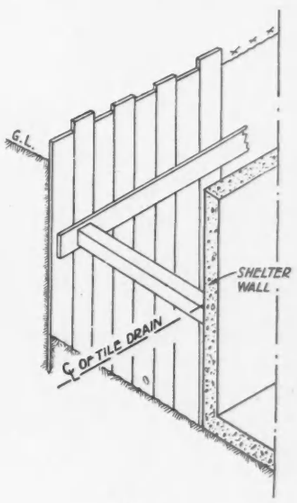


FIG.

plenty of room by excavating a trench of ample width. The trench must be close timbered when the ground is loose or wet, using either runners driven below the bottom of the trench and held by horizontal walings strutted against the back of the walls of the shelter (Fig. 2), or horizontal poling boards with strutted vertical walings. For safety, it is desirable to strut between the walls of the shelter opposite each strut in the trench, so that the walls may not be overstressed. This is particularly important if the ground around both sides of the shelter is excavated at the same time.

As there is a certain amount of danger if asphalt is laid outside the wall that the layer may be damaged when the trench is being filled, it is advisable to protect it by building a 4½-in. brick wall, or a 2-in. pre-cast concrete slab wall, against the asphalt.

In cases where the pressure due to the groundwater is considerable and there is danger of the wall of the shelter collapsing, the only remedy is to make provision for removing the water and relieving the pressure. For this purpose the external lining previously described may be constructed to obstruct the water, but instead of filling the trench in the usual manner a French drain should be constructed at its bottom and the space above this drain filled with coarse clinker or gravel. It is not necessary to extend the clinker filling up to the original ground level; in fact, it is better to use clay for the uppermost 12 in. of the back filling so that surface water will be excluded from the French drain.

These drains should surround the whole of the wall of the shelter and be laid to a fall of about 1 in 20. They should be connected together and discharge into a sump or a convenient drain. In case a sump only is available, it will be neeessary to pump the water from it at intervals. If the ground consists of water-

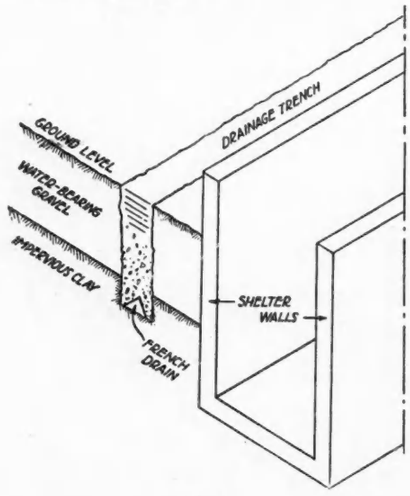


FIG. 3.

bearing gravel resting on a bed of impervious clay it is only necessary to dig the trenches to such a depth that the drains can be laid in the clay (see Fig. 3).

Shelters with Flooded Floors.

The most difficult and costly repair work is required when the floor of the shelter becomes permanently flooded on account of leakage through the bottom or through the walls. Temporary flooding will only occur if an adjacent river is in spate, and disappears as the river falls, but permanent flooding is generally due to waterlogged ground or an underground spring bursting through the side of the excavation in which the shelter is built.

Before any satisfactory remedial measures can be taken the water must be removed from behind the walls and below the floor. One method of doing this is to surround the whole site by a closed system of drainage trenches with open-jointed agricultural or earthenware pipes in the bottom, and to connect these to a drain or a sump from which the water can be pumped. If the water can be discharged into an adjacent drain the problem is simplified and the repair of the floor is less costly. The drains should extend to a depth of 3 ft. or 4 ft. below the bottom of the floor of the shelter or into clay, and the sump should be outside the closed system of trenches. The type of pump required will depend on the conditions at the site, but a 2-in. or 3-in. diaphragm hand pump will be suitable unless there is a very large quantity to pump or continuous pumping is required. If this is too small to cope with the work, a power pump is necessary. Suitable types are the Pulsometer and the self-priming centrifugal pumps.

The effect of pumping is to lower the water table in the vicinity of the drainage system, and this operation allows remedial measures to be carried out "in the dry." It is then comparatively easy to waterproof the outside of the walls, but repairing the floor is more difficult if the only outfall is to a sump, since the most effective position for the waterproofing layer is on the outside, that is, underneath the slab, and once pumping is discontinued the water pressure will again act there.

Two methods of repairing the floor are then available In the first its upper surface is coated with a waterproofing solution; in the second, asphalt is laid in two courses on the concrete slab when it is dry and the walls are also lined with asphalt on the inside. Reinforced concrete walls and floors are then constructed on the new asphalt, so forming a new shelter of reduced width and height inside the existing concrete shelter. The latter method is naturally expensive, but it has the merit of being a certain cure, whereas the first method is always of doubtful value and may even be a waste of money.

It should be mentioned that the first method may give satisfactory results if the ground water level is only a few inches above the underside of the floor of the shelter. It is then possible to lower the water level in the flooded shelter by breaking a hole in the floor with a jack-hammer, inserting an iron pipe vertically in the hole, and grouting the pipe in the floor. Ground water is then pumped from this pipe to an outlet beyond the shelter, and the waterproofing is put on while the water level is lowered. When the waterproofing is finished the iron pipe is closed by screwing a cap on it or driving a hardwood plug into it.

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ing a parent firm which would be directly responsible to the Ministry.

MR. A. BLONDIN (secretary, Master Ladies' Tailors' Organisation) said there was not the faintest possibility of any small man obtaining a direct contract. He suggested that each small manufacturer should use his trade association as a medium through which could be distributed the necessities of war supply. The Federation now being formed could be a central body to function on behalf of all trades.

A vote of thanks was passed to Mr. MacDonald.

SMALL MANUFACTURERS AND GOVERNMENT CONTRACTS

A SECOND meeting of small manufacturers interested in Government contracts was held on Thursday, January 4, at the Holborn Restaurant, London, W.C. As on the first occasion, Mr. J. A. R. MacDonald, who has initiated the movement, presided.

The proceedings were at times animated, as when one speaker proposed that manufacturers in a very small way should not be admitted. This suggestion was not well received, but the Committee's proposal that the subscription should be three guineas per annum was carried almost unanimously in face of an amendment that it should be only one guinea.

In opening the proceedings THE CHAIRMAN said that he had received 1,800 letters from small manufacturers, and he now invited the writers to help him push the Ministry of Supply to the point of giving small manufacturers more Government contracts than the 10 per cent. already promised. They should have an amount equal to that given to the great combines, and instead of contracts being doled out to those firms who were the favourites of the Ministry of Supply, everything should be tendered for. The small manufacturers were the backbone of England, and we could not defeat Germany unless we had their help.

MAJOR THOMAS said the Committee appointed at the previous meeting recommended that a company limited by guarantee be formed and called the Federation of Manufacturers and Producers of the British Empire. Other of its recommendations were that this Federation should be managed by a Council elected from the members and with representation of each trade, that branch committees should be formed, and that the committee appointed at the previous meeting should function as the General Council for the time being.

These proposals were embodied in resolutions and eventually adopted by the meeting.

MR. VYVYAN ADAMS, M.P., said an organisation of the kind proposed at that meeting was of vital importance. Widely scattered throughout the country were a host of small firms, employing in the total something approaching one million operatives. One of the most vital things about the Ministry of Supply was that its work should be decentralised. The manufacturing community should be organised in districts, and then full advantage could be taken of this widely dispersed manufacturing industry. At present all the Ministry could do was to ask big contractors to remember small firms in connection with specified contracts. He knew of a job on a great scale connected with militia camps where at the present time the price of the completed work had to carry a profit for contractor, merchant, manufacturer and builder, and if only this new Federation could persuade the Ministry of Supply to order direct from the smaller firms, two or three intermediate groups of profits could be cut out.

MR. G. G. BLAKEY said the Ministry did not know what the small manufacturer could do, and the small manufacturers did not know what the Ministry wanted. The new association must be helpful to the Ministry, not antagonistic, and should have a practical negotiating committee to act as go-between from the Ministry to the small firms who would form the association. This committee should know what the firms could produce, and what the Ministry wished them to produce.

MR. ROBERT SANDERS said it would be very important to organise industry after the war, and small manufacturers must be enabled to keep their factories going during the war so that they could employ the men when these came home.

SIR CHARLES ALLOM said the Ministry of Supply had agreed to small manufacturers working in groups, each such group appoint-

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TOWN AND COUNTRY PLANNING DURING THE WAR

MEMORANDUM BY DR. THOMAS ADAMS.

A MEMORANDUM by Dr. Thomas Adams, D.Eng., F.R.I.B.A., P-P.T.P.I., has been circulated for the information of planning authorities in England and Wales by the National Housing and Town Planning Council. This arises in part from the Ministry of Health's Circular 1872, issued on October 19 last to local authorities, in which it was stated that while it was manifest that conditions during the war would not permit planning authorities to continue their activities as in normal times, nevertheless it was not possible for planning work to be entirely suspended. The Minister of Health further suggested that local authorities should bear in mind that they must retain some organisation to deal with interim development and other local planning questions which may arise during the war, and that it is desirable that, if possible, they should maintain a nucleus of staff which would preserve continuity, and secure that full planning activity may be resumed without delay so soon as circumstances permit.

The Circular further states that, as regards planning schemes which have already been made and which are at present before the Minister for his approval, the Minister has decided that it is necessary, for the time being at any rate, to defer the holding of public local inquiries, and consideration in the Department of schemes in respect of which a local inquiry has not yet been held must be suspended.

The effect of the Minister's statement is that some work must go on, and that all work should be continued to the extent that will be practicable from the point of view of the availability of staff for the purpose. It is anticipated that local circumstances will cause building operations to be slowed up to some extent.

Considerations Affecting Planning.

In his memorandum, DR. ADAMS gives a summary of general considerations affecting continuation of planning work. These include :—

(1) GUIDANCE OF INTERIM DEVELOPMENT.—As interim development control has to be continued, it is necessary that continuous progress be maintained in preparing plans and schemes, at whatever stage they have reached, in order that the control be intelligently exercised. The fact that there may be some slackening in interim development applications will give a desirable opportunity for proceeding with some constructive planning.

(2) RESERVATION OF SITES FOR ROADS.—It is understood that the Ministry of Transport are not intending to approve any standard widths during the war. This will leave planning as the only machinery available for preserving routes

As money will not be available to make costly road improvements during the war, it is desirable that plans of road reservations should now be prepared to enable improvements to be carried out on the right lines after the war, when schemes for providing employment will have to be organised. Furthermore, it is desirable that, during suspension of large works of road improvement, planning authorities should collaborate with highway authorities in improving existing roads by removing obstructions to the free and safe movement of traffic, *e.g.*, the removal of blinded corners, sharp curves and overlapping hedges, the filling in of ditches, and the provision of temporary footpaths.

(3) PUBLIC AND PRIVATE OPEN SPACES.—Although borrowing will not be permitted during the war, small purchases can be made out of revenue. But in most cases where it is desired to include reservations in schemes it should be possible for authorities to arrange with the owners to suspend payment for a specified period, interest being paid where necessary. Public open spaces should not be withdrawn except under pressure of genuine and appropriate proposals for developing the land. As comparatively little development is likely to occur in many areas the owners would not be able to force the issue of compensation.

(4) AVOIDANCE OF WASTE.—If schemes are suspended for any considerable period, the value of much of the work already done at considerable cost would be destroyed. Changes in personnel of those responsible for the preparation and preliminary administration of the scheme would result in loss of personal contacts and of accumulated knowledge already gained, with the consequence of wasteful duplication of work.

(5) CO-OPERATION BETWEEN PLANNING AND OTHER DEPARTMENTS OF LOCAL GOVERNMENT.—During and after the war it will be more necessary than ever for all town-planning departments of local authorities to be made responsible for reviewing all other municipal activities and for promoting co-operation between committees dealing with different matters, *e.g.*, sites for schools and other public institutions, and roads.

(6) WAR FACTORS IN PLANNING.—War conditions are creating new factors that will involve the necessity of considering changes in planning proposals while the war is on, *e.g.*, revision of the densities to be permitted in residential and business areas in order to make them less vulnerable to air raids and serve the purpose of Section 70 of the Civil Defence Act, 1939. Provision should be made for increased space about blocks of flats and industrial buildings. There are also new problems which will arise, and which will directly or indirectly affect town-planning proposals in connection with housing, evacuation, billeting, siting of camps and war industries, and utilisation of land for food production and recreation. It will be desirable for planning authorities to co-operate with Government Departments regarding these matters, *e.g.*, with the Ministry of Agriculture in respect of allotments.

Preparation for the Post-war Period.

Every effort should be made to visualise the character of the many problems of reconstruction and readjustment that will arise as a result of the revival of building and other peace-time construction which must follow the war. Preparation for the future is necessary in order to understand and deal intelligently with the needs of the present.

In this connection it is important to recall the experience gained in the reconstruction period that followed the last war. After 1918, schemes had to be hurriedly improvised to restore normal activities in industrial and commercial building development, housing, and road construction, and also to convert war industries and equipment to peace-time purposes. In the absence of well-conceived plans, large parts of the expenditures that were incurred were wasted, and some war-time construction was demolished without good reason. Had it been practicable to have had proper plans prepared in advance, *i.e.*, during the war, showing the undertakings and readjustments that were most essential to be carried out and the order of their importance, much economic and social benefit would have accrued to the nation. The fear is now being expressed that the mistakes made after the last war will be repeated, unless the national and local machinery of planning is maintained and strengthened.

Deplorable as may have been the consequences of misguided and unco-ordinated development during the spate of post-war expansion after 1918, they will be more deplorable after the present war, because of the greater changes and dislocations that are likely to occur. To plan in advance to meet the problems that will inevitably arise may result, not only in preventing the changes from doing harm, but also in converting their effects into instruments for the promotion of national welfare.

Changes that will affect post-war conditions in the future to a greater extent than in the past include those that will be caused by :—

(i) the advances made in town planning and housing since 1914;

(ii) the advances made in transport, especially in connection with the increased production and the improvement in design and efficiency of aeroplanes, the development of aerodromes, and the use of heavier road vehicles; and

(iii) the awakening of the public to the consequences of excessive and malformed urban concentration, and thus to the need for the revision of building by-laws and town-planning regulations in order to reduce vulnerability from air attack and promote healthier living and working conditions.

With regard to town planning . . . the fact that the application of town-planning control is so broadly based, and that as a movement it is still in process of evolution, makes it of vital importance that it should not be weakened by inaction during the war. . . Although it is necessary to suspend construction during the early part of the war, an enormous programme of house building and slum clearance will have to be undertaken as soon as financial conditions permit after the cessation of hostilities. In the light of past experience it seems reasonable to suppose that housing and town planning will be more closely linked together and that more consideration will be given to the need for ample space about buildings for health, recreation and movement of traffic. Thus it may be hoped that its essential inter-relations with town planning will be established.

In the second matter of transport, the developments in aerial and road transport are proceeding along lines that may be characterised as revolutionary. One product of the war may well be that a new foundation will be laid for a great expansion of air services, involving the maintenance of many industries created for war purposes. On the other hand, roads will have to be built to accommodate heavier and speedier vehicles, and yet to be usable with greater safety. The alliance of air and road transport in new forms will surely involve new adjustments and improvements in rail transport.

The third question of the problems incidental to urban concentration in great cities, particularly London, has been an important issue in public discussion for many years. Defective distribution of population and industry, and its corollary of congestion in big cities, have become almost intolerable in their effects on movement of traffic, overcrowding of land with buildings, and separation of workers from places of work and recreation Depression in some areas has been partly the result of excessive concentration in other areas. Enormous public expenditures have been incurred in the attempts to deal with this problem In 1937, the Royal Commission on the Geographical Distribution of the Industrial Population was set up to investigate conditions. . . .

Since the Royal Commission was appointed, the evacuation from cities in connection with air-raid precautions has become a question of burning importance. But evacuation was being carried out on a small scale for peace purposes before the war, *e.g.*, the London County Council was evacuating school-children for holiday periods. Another phase was the tendency of the population of Greater London to drift outwards from the centres to the outskirts. To the extent that workers were able to bear the cost and inconvenience of transport, they have been evacuating them-

selves into dormitory suburbs for many years. The garden cities have stimulated evacuation of industries and population to new sites. Therefore, in different respects, evacuation from crowded centres has long been a widespread movement. The war conditions have now made it necessary on a large scale and given it new meaning, but as a process it is not new. It is obvious that in the near future some permanent scheme of safer and more efficient distribution of industries and population will have to be evolved and gradually carried into effect. On the other hand, it is also obvious that the need of a comparatively high degree of concentration will still be demanded for efficiency of commerce and industry, and that the removal of congestion and malformations in existing cities will be necessary to permit them to function properly.

In their larger aspects, these are problems which many will regard as beyond the scope of town and country planning. This view, however, is based on misunderstanding of the economic and social implications of planning and the benefits it may produce in promoting the orderly arrangement of the physical structure of communities. The economic aspects of town planning and its bearings on social welfare have far too often been overlooked, while its æsthetic aspects in relation to preservation of amenities have been too much stressed in comparison. All are important, but what is most vital is that the nation should be planned in its units of urban and rural areas in order to promote most efficiently the wealth-making activities of its population and to provide them with higher standards of living and working conditions. In proportion as this aim is accepted as the basis for planning policy, the need for continuing planning efforts during the war and developing safeguards against dislocation, emergency bungling and economic waste after the war will be appreciated in its true significance as a national duty.

TOWN PLANNING DECISIONS.

At a meeting of the SOUTH TEESIDE JOINT TOWN PLANNING COMMITTEE, at which representatives of Middlesbrough, the North Riding C.C., Thornaby, Redcar, Saltburn and Marske, Estor, Stokesley and Guisborough were present, it was found impossible to secure agreement on the formation of a joint board to nominate, when confirmed, the planning scheme now before the Ministry of Health. It was agreed to submit the observations to the Minister of Health and to call the attention of the latter to the suggestion of co-operation between Guisborough, Saltburn and Marske, and the rural area of Stokesley.

It has been decided by SOUTH STAFFORDSHIRE AND NORTH WORCESTERSHIRE JOINT TOWN PLANNING COMMITTEE to continue their town-planning work and to proceed with the preparation of the draft scheme with all possible speed, the whole position to be reviewed in twelve months' time.

The LONDON COUNTY COUNCIL'S planning activities are to be curtailed. Progress will be stopped on new schemes north of the Thames. Schemes south of the Thames are more advanced, and a depleted staff will work on these so that they may be dealt with after the war.

"EVACUATION IN PRACTICE"

AN A.A.S.T.A. REPORT.

A REPORT on "Evacuation in Practice: a Study of a Rural Reception Area," has been prepared by the Evacuation Committee, the A.A.S.T.A., 57, New End, London, N.W.3, in collaboration with the A.A. School Rural Planning Group. A study of a sample reception area, the report has been based upon a survey of Wantage and eleven surrounding villages in Berkshire in connection with a study of planned rural life.

The evacuation survey was made twelve weeks after evacuation took place. "During this time the scheme has to a large extent collapsed," states the Report. "This is especially true of the evacuation of mothers with children, the great majority of whom never left or have since returned to the evacuation areas. Conditions are now more stable and the returns are reduced to a steady trickle.

"But the danger of large-scale air raids is as real as it ever was. If the war goes on its tempo will increase, and inevitably, at some stage or other, we must expect the full strength of the enemy air forces to be thrown against the civil population. The statement in our first Report, that 'evacuation can and must be made a success,' is as true now as it was then.

"Our immediate task is to hold an inquest on the first twelve weeks, in order to build afresh on the basis of our findings. If the war had been the 'blitzkrieg' that most of us expected, many of the shortcomings of evacuation would have been ignored under the immediate stress of crisis. But at present we are faced with long periods of preparation and suspense in the military sphere, with no knowledge as to whether the forces of the air will be let loose this week, next spring, or even a year from now. All we can do is to take the Government at its word, prepare for three years of war, and build up a satisfactory and stable position in the reception areas. And by a satisfactory position we mean not only the retention by the reception areas of those who are there at present, but the re-evacuation of those who returned to the towns and the evacuation of those evacuable people who never left. This is the only way to reduce the terrible rush from the towns which will undoubtedly take place if large-scale air raids have to be endured."

The Need for Special Buildings.

The survey, which rightly begins at the beginning (*i.e.*, by a study of the social problems created by evacuation), is largely based upon a questionnaire of some 130 items, covering such subjects as housing, education, social life, health services, statistics of evacuees in all categories, details of premises taken over, billets, communal feeding, "difficult" cases, finance, visits of parents, billeting committees, tribunals, voluntary organisations, etc.

The effect of the survey, as we judge it, is to present an overwhelming case for the creation of special buildings for evacuation, including camp schools, new buildings for education and feeding, nursery schools and day nurseries. These, as the evidence contained in the Report goes to prove, are necessary on health, educational, social and moral grounds.

In the chapter headed "Conclusions," the Committee state:—

"It is obvious that in war time expenditure must be allotted to different activities according to their national importance. For instance, money is being found for hutments for evacuated civil servants who have shown their discontent with the present position. We do not grudge this expenditure—on the contrary—but we do look with apprehension at the refusal to release money for the children. It appears that evacuation is at the bottom of the scale. One per cent. of what is being spent on the war in a single year would transform the situation, while three times this amount would pay for a complete building programme, including camp schools, new buildings for education and feeding, and nursery schools and day nurseries.

"The children are the future of the nation, and therefore those for whom we are fighting. Our treatment of them is the sort which might be expected in a pauperised Balkan state, but is scarcely in accordance with the resources of the richest country in Europe.

"It may be said that difficulties will arise over the supply of building materials. It is true that many materials are rationed for emergency purposes, but on the other hand, practically all civil building has been stopped, and there are even instances of brickyards which have closed down for lack of work. If some materials are unobtainable, it will be the job of the architectural profession to find substitutes for them, to develop other methods of construction, or to find new ones. For essential materials we are surely entitled to ask that evacuation needs should be given some position on the priority list, not omitted completely, as at present.

"Similarly with labour. In the rural areas the stoppage of ordinary building has had a particularly serious effect and many small firms are going bankrupt. It is, of course, to these areas that evacuation could bring work, and as much of what we have suggested is construction of a traditional type, it could commence at once. We can say quite definitely that the building industry is easily capable of carrying out such a programme of work as we envisage. Its annual turnover in peace time is something like six times the maximum we should contemplate spending.

"What is needed is a thorough survey of evacuation requirements throughout the country. The carrying out of the necessary measures in each area must be the responsibility of the local authorities, but the cost must be met by grants from the Exchequer, in continuance of the principle applied to expenditure which has already been incurred. Strengthened powers over accommodation will be required and must be used.

"There are no short cuts to successful evacuation, and we do not pretend that it will be achieved without great efforts. That is why the problem must be tackled seriously, and at once. But success will mean more than this. A programme such as we have outlined gives us a chance to end that lack of sympathy between town and country which the present scheme has exposed. We can enrich rural life and at the same time broaden that of the town. We can keep our children in safety by measures of defence that will not only protect from attack, but will give lasting benefits when the war is over."

Copies of this Report may be obtained from the A.A.S.T.A., 57, New End, N.W.3, price one shilling, post free.

The Government Camps.

EARL DE LA WARR, in a statement last week, announced that by April 1 all camps under construction should be completed. Owing to increased costs the 45 camps proposed for England have been reduced to 31; five more are to be built in Scotland. Eight camps in England and Wales are actually ready, Surrey and Oxford each having two, and Cheshire and Flintshire one each; in addition, two camps in the Chilterns and in Hampshire are already in occupation.

PRIME COST CONTRACTS FOR EMERGENCY WORK

On December 14, 1939, the Minister of Home Security (A.R.P. Dept.) decided to issue A.R.P. Department Circular No. 340/1939 to all County Councils, County Borough Councils (and the Corporation of the City of London), Metropolitan and Municipal Borough Councils, Urban and Rural District Councils in England and Wales, together with County Councils, Councils of Cities and Large and Small Burghs in Scotland.

The circular was issued in order to advise and assist local authorities who at the present time are finding it difficult and in some cases impossible to draw up contracts and to obtain tenders on the usual "entire" or "lump-sum" basis. The great majority of contractors have declined to undertake such work except on a "cost-plus-profit" basis.

The circular does not recite the terms of these two form of contract, presumably taking it for granted that they are common knowledge amongst those to whom the circular is addressed. But before we go further it may be well to recall that an entire or lump-sum contract is one under which the contractor undertakes to complete the whole work for a fixed, or "lump-sum," price agreed by the parties. Contrariwise, a cost-plus-profit contract (or as it is more commonly called a prime-cost-plus-percentage contract) is one under which the contractor agrees to supply in connection with the work set forth in the contract documents all labour, materials, tools, tackle, plant, etc., to carry out the contract to successful completion, on the undertaking of the employer to pay, as representing the contractor's total remuneration, an agreed percentage on the total prime cost of all he supplies for the job; this cost to include overhead and establishment charges; that is, all recognised outgoings to which the contractor may be put on behalf of the work, plus a percentage.

Essential Conditions.

For the satisfactory carrying out of an entire or lump-sum contract, it is obviously essential, and generally taken for granted, that no serious variations in the contract documents shall be in the contemplation of the parties on signing the contract, and that only additions and omissions may be measured and subject to financial adjustments on completion of the contract. A prime-cost-plus-percentage contract more easily lends itself to an emergency enterprise; as, among other things, time is not lost in preparing and agreeing contract documents (including plans, specification and bills of quantities) which are an essential basis of a lump-sum contract; and in the contractor's making of careful calculations and costings, after provisional arrangements with merchants for materials.

The Minister of Home Security makes reference to inherent dangers in the operation of the prime-cost-plus-profit form of contract at this time; but he does not suggest in what direction those dangers may lie. Many of these must originate in the necessity to put in hand immediately work urgently needed, when there is little or no time for the preparation of plans, specification or bills of quantities, which in work of any magnitude are the only basis on which a contractor can tender satisfactorily.

However, against all this must be weighed the dangers which are incident to a prime-cost-plus-profit contract. For example, the contractor is likely to order an amount of material in excess of requirements; and this, even under most careful supervision, will result not only in augmenting the figure of the prime cost and his proportional profit, but also in a varying amount of waste and inevitable increased cost to the employer.

The writer, in speaking from wide experience of both kinds of contracts in the last war, instances a case of several hundreds of window frames and sashes being left over after the construction of a camp. No accommodation for storage being available, they were left to rot on the surrounding land. Nevertheless, the prime cost of them, and the agreed percentage profit, were paid by the Government.

A Safeguarding Clause.

The Minister has indeed introduced a safeguarding clause that no remuneration to contractors is to be based on a fixed percentage on an unascertained cost.

The terms recommended in the circular are to be applied not only to the schemes for construction, erection and adaptation of public air raid shelters required under the programme of the Government, but also to subsequent work of demolition, repair and reconstruction which might become urgently necessary in the event of any damage to the shelters from air attack of any considerable magnitude.

It is admitted that in the latter circumstance time would not allow of the normal system of tendering, and indeed, that the exact extent and nature of this particular work would not be easily ascertainable, and would not lend itself easily to a contract of the ordinary lump-sum type. But the Minister makes it clear that the cost-plus-profit form of contract is only to be used when it is impossible to proceed on the "ordinary basis of tender and detailed specification."

In localities where it is impossible or impracticable to obtain tenders for works under the Government's shelter programme, the matter is to be submitted to the Regional Technical Adviser for his approval.

The Minister specially desires that there should be a proper distribution of constructional work among the resources available locally.

Draft Form of Contract.

Accompanying the circular is a draft form of prime-cost contract for emergency work, issued as a standard form for the guidance and use of local authorities in Great Britain. It was drawn up by the Minister's technical advisers, and has the approval of the Constructional Trades Civil Defence Committee—a committee set up to advise the Minister on questions relating to the constructional industry. Every side of the industry is represented on this committee, and it was only after the draft form of model contract was "remodelled in the light of the Committee's expert criticisms" and had had its "full approval" that the Minister put it forward and recommended it to local authorities as comprising standard terms for prime-cost contracts.

It is pointed out that there is no statutory obligation put upon local authorities to use the Form. If an authority after careful scrutiny can do better they may do so. But if an authority accepts terms less favourable than those recommended, the Minister states that he will not feel justified in recognising for purposes of grant, under the Air Raid Precaution Act, the excess expenditure so incurred.

Need to Secure Approval.

In general, approval must previously be obtained, through the Regional Technical Adviser, of the contract to be entered into; though if it is not practicable to do so, the matter must be reported to him as soon as possible.

The Minister emphasises the necessity for the work being very closely supervised by the local authority's supervising officer (architect, engineer or surveyor, as the case may be). It is he who is responsible for certifying the amounts due to the contractor.

The contract, amongst other things, provides for payment at weekly intervals of sums disbursed in wages at standard rates; and for payments at fortnightly intervals of sums disbursed for materials. These periodical payments are an essential feature of the contract.

Where it is necessary to exceed normal hours of labour in the building industry—the total working hours should not be more than a maximum of 60 in the week, and this limit should only be exceeded to meet sudden and unforeseen emergencies.

The scale of fixed charges for mechanical appliances and plant hire given in Schedule II is a sliding one, varying inversely with the cost of the work. They represent current prices, though amending lists will be issued as and when necessary. Local authorities should avoid the splitting or sub-division of work into a number of small jobs so that they and the Exchequer should benefit by work being let in large jobs.

The Contractor's Responsibilities.

The Form is to be commended, though it must not be thought that it is the only Form for the purpose which might have been employed. It embodies for the particular type of contract those terms used which have proved in the light of present-day experience to have been found to be necessary in such a form of contract. It comprises 26 clauses and two schedules. The second schedule we have already referred to. The first schedule is reserved for the works to be done and as required by the superintending officer. The contractor is made responsible for:—

(*a*) The salaries and expenses of all principals and contractors' surveyors.

(*b*) The wages of pay clerks and other clerks.

(*c*) The rent of all offices, yards and storage places, and rates and taxes in respect thereof.

(*d*) The cost of all stationery, printing, postage, telephonic and telegraphic charges.

He is also made liable for insurances generally and for injury to persons, property or things.

The costs properly incurred and which the employers must pay for are set out. They are wide and inclusive.

Arbitration in case of dispute is provided in respect to any matter included in the contract once a decision has been given by the superintending officer. His decision may be in the form of a final certificate or otherwise.

EMERGENCY INQUIRY BUREAU

Questions from readers arising out of War-time difficulties and recent Emergency legislation will be answered by a special staff of contributors. Questions, which should be addressed to the Editor, should be accompanied by a stamped and addressed envelope.

Termination of Building Contract: Percentage Obtainable.

SIR,—*Could you inform me what percentage of a contract sum could be demanded, and possibly obtained, by the contractor for loss of profit and salaries in consequence of the proprietor terminating a building contract on account of the war affecting his requirements? The contractor in this case is very desirous of proceeding with the work.* T. H. R.

A correspondent writes: On the facts given, if it was a pre-war contract, querist would be entitled to whatever was occasioned by the breach of it owing to the war. The war does not affect pre-war contracts unless there is some term in those contracts as to what is to be the position in the event of war. Then, of course, the parties to those contracts are bound by their terms.

Generally, 15 to 20 per cent. is allowed in respect to profit and overhead charges, which, of course, include salaries; but, as has been stated, the full amount claimable is what is occasioned by the breach of the contract.

Compensation for Private Property.

SIR,—*When is compensation for war damage to property in private ownership claimable?* W. D. B.

According to a statement made by the Chancellor of the Exchequer, the compensation will be claimable when the extent of the damage is known. It is to be made from public funds on the highest scale compatible with the circumstances of the country, in accordance with a scale which will, at any rate, pay in full up to a certain limit of loss and would thereafter be graded. The Chancellor added that although compensation could not be made available until the total losses were known at the end of the war, it would be necessary to assess the damage in each case as soon as possible after it had occurred.

OFFICIAL NOTIFICATIONS

IRON AND STEEL CONTROL.

THE Minister of Supply (as stated in our last issue) has issued a Direction (No. 2), dated December 22 last, under the Control or Iron and Steel (No. 4) Order, 1939, which came into operation as from January 1.

The new Direction supersedes the Direction (No. 1) issued at the same time as the No. 4 Order. The main features of the new Direction are that the exemption of pre-war contracts from the requirement of a licence disappears, and in future deliveries under such contracts will be subject to the licensing provisions of the Order, and, except in the case of departments of the United Kingdom Government, the existing exemptions from licence have been restricted to purchasers of materials for use in the United Kingdom.

In addition, purchases of home iron-ore, pyrites ash, burnt pyrites residues and boot and shoe grindery for use in the United Kingdom have been exempted from licence. Amendments have also been made in the provision for sale and purchase of small quantities of material without a licence.

Eight additional related price schedules have been deposited.

THE BUILDING INDUSTRY

GENERAL POSITION.

"THE disruptive effects on the building industries of the outbreak of war appear to be much more extensive and serious than formerly seemed likely or, indeed, than is necessary," states the current issue of the *Building Industries Survey*, published by the Building Industries National Council, 85, Gloucester-place, W.1.

"It is well known that a large volume of Government work is in progress and that the programme for the immediate future is likely to be even greater in view of the necessity of increasing available accommodation in advance of an expansion of productive effort and the consequent need for greater storage. As with the rearmament programme, so with war-time preparation, the building industry is the first to be affected.

"It was probably with such considerations in mind that the Government on the outbreak of war made sweeping decisions which have quickly led to the virtual cessation of new civil building work.

"The effect of these measures is clearly shown by the fact that the number of building operatives unemployed in October, at 129,948, was more than one-third greater than in the previous month, in spite of the increase in the Government programme and the acceleration of existing works, the large volume of civil defence activity, and the depletion of the available labour force by the calling up of men for military service.

"The restriction of civil building activity shown by these figures has led to the expression by all sides of the industry of grave concern at the harm being done to the industry and its associated interests.

"It is essential in time of war for the Government to have first claim on the resources of all industries for the prosecution of hostilities, but it is equally essential to build up the national income to a maximum by permitting, and indeed encouraging, as much civil activity as possible in order to increase the yield of taxation, and thus provide what are literally the sinews of war.

"The experience of the country during the general depression and the subsequent recovery amply demonstrated the importance of the stimulating effect of a well-employed building industry.

"It is hardly too much to say that had all sections of the industry been brought into close consultation with the Government during the rearmament programme, or even at the outbreak of war, a disruption of the industry so grave as to threaten it with disintegration could have been avoided. Adequate organisation of Government programmes and of materials' supply, coupled with the balanced use of the industry's resources through the working out of alternative methods, would, by enhancing efficiency, have left available a greater margin of resources for utilisation in civil work. In building it is especially true that the output to be obtained from given industrial resources depends not only on their magnitude but also on their organisation and co-ordination. An organised programme with a steady flow of work and a balanced employment of resources gives greater output than unco-ordinated or even competing programmes proceeding without regard to the balance of the industry.

"The Council will make every effort to achieve on these wider considerations that fruitful and constructive consultation which it has already effectively established on the technical aspects of civil defence. The united efforts of the industry, comprising the professions and materials interests as well as contractors and operatives, can alone provide a satisfactory solution to the problems with which the industry is confronted."

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THE UNITED ARTISTS' EXHIBITION

THIS exhibition, which is now open at the Royal Academy, is in aid of the Lord Mayor's Red Cross and St. John Ambulance Fund and the Artists' General Benevolent Institution, and in each case the artist has agreed to resign one-half of the price of a work sold to be divided equally between the funds mentioned. The exhibits are drawn from the work of members of some twenty-four art societies. From such a number one would expect, and get, a great diversity of subject-matter with individual methods of technique which make the exhibition of much general interest. With such a multiplicity of subjects it should not be difficult for the most fastidious or the most advanced followers of the modern school to make a choice, and perhaps a wise purchase. Those who visit the exhibition will find represented many clever artists too numerous to make individual mention of their work. Sculpture and bronzes make a helpful contribution to the exhibition. The familiar architectural room is hung with black-and-white drawings and etchings, amongst which are many finely executed examples. As is customary, the private view was well attended. It was pleasing to see the President of the R.A., Sir Edwin Lutyens, holding converse with the veteran architect, Mr. C. F. A. Voysey. The exhibition will remain open until March 9, from 9.30 to dusk, admission 1s. 6d.

NEW BUILDINGS IN LONDON

FELTHAM.—CLEANSING STATION.—The U.D.C. are inviting tenders for a cleansing station, temporary garages and appurtenant works, at the highways depot in Ashmead-road. The plans are by the Engineer and Surveyor.

A.R.P. SCHEMES

AUDENSHAW. — Lancs C.C. approved shelters in basements and 87 private shelters, each to accommodate 50 persons.

BARKING.—The Director of Education, together with the Borough Architect, submitted plans in connection with scheme for protective accommodation at Northbury, Westbury, and Gascoigne schools. E.C. to expend £2,000 in connection with the protection of schools. Director of Education, together with Mr. H. H. Dawson, architect, submitted plans in connection with scheme for the protective accommodation for children at Manor central, junior and infants' schools. Borough Architect to prepare necessary plans for submission to M.H. for erection of joint first-aid post and cleansing station in hospital grounds. Borough Architect prepared plans for proposed first-aid post and cleansing unit on Becontree estate. Council approved shelters in respect of A.F.S. vehicles, at £1,840.

BEDDINGTON AND WALLINGTON.—T.C. accepted tender of M. Howard (Mitcham), Ltd., for brick-surface shelters for £847 19s., and tender of H. Hemmings, Ltd., for the construction of underground shelters, at £729 3s. B.S. to obtain prices for 30 surface shelters. Medical Officer of Health and B.S. to report on possibility of providing a cleansing station at Centurion Laundry, Hackbridge.

BLACKPOOL. — C.B. recommend mess room and store room adjoining and underground heating chamber at Talbot-road 'bus station as public air raid shelters, and agree to the alterations. Council to provide air raid shelter accommodation for 150 men in Transport Department at Rigby-road depot.

BLACKWELL.—R.D.C. to erect 2 public shelters at Shirebrook and 2 at South Normanton. Plans by A. H. Elliott, E., Dale Close, Chesterfield-road South, Mansfield.

BRANDON.—U.D.C. received sanction to construct 17 shelters to hold 50 people each. J. P. Addison, S., prepared plans.

CARDIFF.—For erection of 31 communal shelters, the T.C. accepted the following tenders: J. E. Evans, West Luton-place, Cardiff, 15 shelters at Sanquahar-street, at £3,513 1s. 3d.; R. B. Fear, 45, Warwick-street, Cardiff, 14 shelters at N. Clive-street and Parkfield-place, at £3,266 12s. 2d.; Bailey Beavis and Co., "S. Malo," New-road, Rumney, Cardiff, 2 shelters at Harvey-street, at £413 10s. 10d.

CHISWICK.—For erection of cleansing station and accommodation for personnel at River depot, Corney-road, and Town Meadow depot in High-street, Brentford, for B.C., a contract has been placed with Geo. Wimpey and Co., Ltd., 27, Hammersmith-grove, London, W.6. Plans by L. A. Cooper, L.R.I.B.A., M.I.M. and Cy.E., Town Hall.

DARLINGTON.—T.C. to apply for sanction to borrow further £2,789 for building, protection and lighting of public shelters.

DARTFORD.—R.D.C. approved plans for shelters for Kent E.C. as follows: Fawkham C.E. school, Sutton-at-Hone and Hextable C.E. school, Hartley C.E. school, Darenth school, and Farningham school.

DONCASTER.—T.C. propose public surface shelters at Hyde Park cemetery.

ESSEX.—C.C. recommend the following: Huts for messing and sleeping accommodation at St. Chad's depot, at £436; A.R.P. stores at Horn-lane and Eagle-lane depots, at £577 14s.; strengthening report centre, at £587 11s.; cleansing station at Canvey Island, at £450; protection, decoration and strutting at report centres, Eastern area, at £175; adaptation of Chandos Hall, Clacton-on-Sea, at £175; heating and lighting at 46 wardens' posts, at £194 16s.; rest and messing accommodation at Hythe wharf cleansing station, at £150; £40,000 in connection with shelter accommodation (permanent or otherwise) at schools; trenches at Oldchurch County Hospital, Romford, at £1,976; adaptation and provision of additional equipment at Tendring Institution, at £276 15s.; increased kitchen accommodation at St. Margaret's Hospital, Epping, at £1,283; shelter for hospital personnel at Essex County Hospital, Wanstead, at £1,820; and filling in trenches at South View-road, Loughton, at £150.

FRIERN BARNET.—U.D.C. waiting approval of C.C. for construction of public air raid shelters in Oakleigh-road North, near Barfield-avenue.

KENILWORTH.—U.D.C. proposes decontamination centre at council depot. Plans by S.

LEYTON.—T.C. accepted tender for 57 surface shelters from Messrs. Carter, of Romford. Subject to approval of the Home Office, B.E. and S. is to erect a temporary building and provide the necessary plant for decontamination of protective clothing and equipment, at £700. T.C. received from Ministry of Home Security approval of concrete linings for 500 householders' shelters for water proofing purposes, at £3 per shelter.

LITHERLAND.—U.D.C. propose twelve shelters on various sites.

LIVERPOOL.—T.C. recommend shelters at Old Swan and Garston technical institutes in accordance with plans by the City Architect.

MANCHESTER.—T.C. recommend shelter, 7-13, Mosley-street, £490; shelter, 27-35, Granby-row, £522; shelters, Temple-street and Holt-street, £3,288; shelter, Victoria Hotel, £2,300; shelter provision for workmen or Cleansing Committee, £5,000; roof over condenser coils at Smithfield Cold Stores as protection against splinters of bombs, etc.; public shelter on land adjoining Withington Institution. Plans approved for shelter and three-storey garage, Hardman-street and Austin-street, Manchester, and shelter, Marlborough Mills, Union-street, Dark-lane and Heaton-street, Ardwick.

MARGATE.—T.C. accepted tender of W. W. Martin, Ltd., Dane Park-road, Ramsgate, for underground auxiliary police station, and not as stated in our last issue. Plans by W. L. Armstrong, B.E., 40, Grosvenor-place.

NEWCASTLE.—E.C. to construct shelters at Rutherford College Girls' School and the School for Cookery in Northumberland-road. Plans by F. Harvey, Education Offices, Northumberland-road. Contract for basement shelters, at Pumphrey and Carrick Watson's premises in Blackett-street, and also in the Cloth Market, let to J. Jackson and Son, Corporation-street. Architects are Newcombe and Newcombe, Eldon-square. J. N. Fatkin, 17, Bigg Market, is architect for basement shelter at premises in Clayton-street for S. Goldberg. Contract for basement shelter at premises of W. E. Harker, Ltd., Grainger-street, been let to J. R. Rutherford and Sons, The Minories, Jesmond-road.

NEWCASTLE-ON-TYNE.—For erection of A.F.S. headquarters in Pilgrim-street, for the City Council contract placed with J. T. Main, Elswick-road, Newcastle-on-Tyne. Plans by J. F. C. Solomon, City Estate and Property Surveyor.

NORTHAMPTON.—T.C. to lease land at Tower-works, Stimpson-avenue, to J. Sears and Co. (True Form Boot Co.), Ltd., for shelter accommodation.

NORTHANTS.—E.C. to seek £5,000 loan sanction for additional precaution for schools.

ORMSKIRK.—U.D.C. propose 14 additional shelters in parks, playing fields, etc.

PRESTON.—B.S. been authorised, subject to Ministry of Home Security approval, to proceed with 385 domestic surface shelters in yards of houses which are unsuitable for steel shelters, at £16,063. E.C. propose provision of shelters at St. Ignatius' Central School, at £220, and Park School, Winckley-square, at £250.

ROTHERHAM.—E.C. approved provision of air raid protection for Governors of Grammar School, at £2,018.

ROXBURGHSHIRE.—C.C. is to erect throughout Hawick, a number of shelters.

RUNCORN.—U.D.C. proposes public shelters each to accommodate 40 to 50 persons at £40,000. Plans by A. B. Cunningham, S.

SALFORD.—Finance Committee of T.C. recommend that Council apply for consent to borrow £5,069 for school shelters.

SCARBOROUGH.—B.E. to prepare plans for shelters, junction of Prince of Wales-terrace and Filey-road, Burniston-road car park and at St. Mary's schools.

SHEFFIELD.—D. O. Neill and Sons, Solly-street, Sheffield, 1, contractors for public shelter at the premises of C. and A. Modes, Ltd., Fitzalan-square.

SOUTHALL. — Home Office approved scheme of T.C. for conversion to an auxiliary fire station, at £550, of premises in Havelock-road. Council accepted estimate of A. and B. Hanson, Ltd., for overground precautions shelters.

STANLEY.—U.D.C. received sanction to construct 500 domestic shelters of brick and concrete. J. R. Heslop, S., prepared plans.

STRETFORD.—T.C. approved sites for provision of shelters which would accommodate 2,980 persons. Approval had been received in respect of four schemes for strengthening of basements in public and private properties, providing accommodation for 410 persons.

SUTTON AND CHEAM.—T.C. approved Carshalton U.D.C. constructing a trench shelter in the Benhill recreation ground near the Harold-road entrance. Plans passed for shelter at 153, Central-road, Worcester Park, by G. W. Young, for F. Freeman and Sons.

SWINTON. — U.D.C. propose public shelters, White-square, Woodman Corner and Victoria-street, Kilnhurst.

TWICKENHAM.—T.C. made application to Ministry of Home Security for permission to construct public shelters at Thames Eyott flats, at £282.

WAKEFIELD.—T.C. seeking permission to go ahead with small communal shelters of its own. Plans of these new shelters, to hold 50 people in two compartments, have been submitted to the Home Office. Plans by S. Hutton, City Architect and Surveyor.

WALLSEND.—E.C. approved schemes for protection at ten schools, at £7,000. P. L. Browne, 22, Highbury, Jesmond, Newcastle, and R. Burke, Singleton House, Newcastle, are joint architects.

WALLSEND.—R. Burke, Singleton House, Northumberland-road, Newcastle-on-Tyne, architect for shelters at St. Aidan's and St. Columba's schools.

WALTHAMSTOW.—B.E. and S. prepared scheme for further brick trench shelters, and recommended that shelters should be provided at Lloyd-park, Salisbury Hall, Selborne-road, Chestnuts Farm, Forest-road, and Handsworth-avenue, to provide for approximately 2,100 persons, at £7,000. Following plans for shelters approved: 258-260, Hoe-street—J. Lyons and Co.; Messrs. Hardcastle, Forest-road—Cuthbert Lake and Sutton; Messrs. Dunhill, Forest-road—Cuthbert Lake and Sutton; Blackhorse-road—F. W. Woolworth and Co., Ltd.; High-street—Marks and Spencer; Hoe-street—London Co-operative Society.

WIDNES.—E.C. are proposing to provide protective shelters at 12 elementary schools at £5,000.

WOOD GREEN.—T.C. placed contracts with R. F. Peachey and Son, Ltd., for surface shelters, and C. and A. Pilgrim for domestic surface shelters.—Plans passed by Council: 2 shelters abutting buildings, dairy premises, Station-road, for 80 persons, by F. T. Dear, 34, Palace-court, W.2, for United Dairies, Ltd.; 6 shelters abutting factory, Mayes-road, for 1,000 persons, by Waterhouse and Ripley, architects, Staple Inn-buildings, High Holborn, W.C.1, for Barratt and Co., Ltd.

WOOLWICH.—B.C. recommend the following: Domestic surface shelters, type "B," at £451; type "A," at £790 12s.; type "D," at £1,482; Woolwich Equitable Building Society—shelter for 250 persons in basement, General Gordon-place, at £1,012; Plumstead High-street school, accommodation for 466 persons, at £2,302 8s. Domestic surface shelters: Eley and Allen, architects, J. E. Evans, Kem Estates, and B. I. Brown, contractors, at £325, £175 and £150, respectively; G. S. N. Stone, architect, A. C. Wright, contractors, at £725; Wright and Renny, architects, G. T. Scudamore and W. Harris, contractors, at £458 and £688, respectively. Trench shelter at rear of Knee Hill public convenience, Abbey Wood Station, for 50 persons, by Wimpey and Co., Ltd.; basement of 102, Westmount-road, Eltham Park Station, strengthening, etc., to accommodate 50 persons, at £130, by B.E.; basement of 11, Belson-road, S.E.18, strengthening, etc., to accommodate 160 persons, at £284 4s., by B.E. Minister of Home Security approved air raid precautions grant of £4,360 in connection with cleansing station, Middle Park-avenue. Surface shelter on west side of entrance road to Castlewood, Eltham Common, for 50 persons, at £218, by B.E. Subject to approval of M.H., work to be carried out by B.E. for adaptation of first-class swimming baths, at Plumstead, as mortuary, at £1,505.

CONTRACTS OPEN

For some contracts still open, but not included in this list, see previous issues. Those with an asterisk are advertised in this number. Certain conditions beyond those given in the following information are imposed in some cases, such as that advertisers do not bind themselves to accept the lowest or any tender, that a fair wages clause shall be observed, that no allowance will be made for tenders; and that deposits are returned on receipt of a bona-fide tender, unless stated to the contrary. The dates at the head of paragraphs are those for the submission of tenders; a dagger (†) denotes closing date for applications; the name and address at the end refer to the person from whom particulars may be obtained. Abbreviations: (A) for A.R.I.B.A.; B. of E. for Board of Education; B.C. for Borough Council; B.E. for Borough Engineer; B.S. for Borough Surveyor; C. for Clerk: C.B. for County Borough; C.C. for County Council; C.E. for County Engineer; C.S. for County Surveyor; D.S. for District Surveyor; E. for Engineer; E.C. for Education Committee; (F.) for F.R.I.B.A.; (L.) for L.R.I.B.A.; M.W.B. for Metropolitan Water Board; M.H. for Ministry of Health; M.T. for Ministry of Transport; P.C. for Parish Council; R.D.C. for Rural District Council; S. for Surveyor; T.C. for Town Clerk and Town Council; and U.D.C. for Urban District Council.

BUILDING.

JANUARY 12.

Doncaster C.B.—Precast concrete trench units, Bawtry-rd. B.S., 2, Priory-pl.

Newport (I. of W.) C.C.—Electric light in school A.R.P. shelters in various districts. S. Gregson, county architect, County Hall, Newport.

JANUARY 13.

Glamorgan C.C.—Air raid precautions cleansing centre at Barry Dock police station. D. J. Parry, Deputy-Clerk of C.C., County Hall, Cardiff.

South Cork Board of Health.—Houses on various sites. B. O'Flynn, architect, 60, South Mall, Cork. Dep. £10.

JANUARY 15.

Feltham U.D.C.—Cleansing station, temporary garages and appurtenant works, at highways depot, Ashmead-rd. E. and S. Dep. £2 2s.

Ince-in-Makerfield U.D.C.—16 semi-sunk and 9 surface shelters in brickwork to accommodate 50 each. P. Fairclough, S., Council Offices.

Leeds T.C.—4 A.R.P. demonstration training grounds in various parts of city. W. S. Cameron, City E.

Pontypool U.D.C.—Conversion of premises at Park-bldgs., into cleansing depot. E. and S. Dep. £3.

Seaton Valley U.D.C.—Demolition and disposal of approximately 30 houses in Long Row and Double Row, New Hartley. S., Council Offices, Seaton Delaval.

Wallasey T.C.—Alterations to various schools situated in evacuation area. B.E.

Wednesbury T.C.—26 precast concrete A.R.P. trench shelters, each for 50 persons. A. Booth (F.), Borough Architect. Dep. £2 2s.

JANUARY 16.

Adlington U.D.C.—Surface shelters and semi-sunk shelters. T. Warwick, S., Council Offices, Adlington.

Cheshunt U.D.C.—Cleansing station and report centre, rear of council offices, Manor House, Turner's Hill. A. Burton Stibbon, E. and S. Dep. £2 2s.

Romford T.C.—Cleansing station, Havering-rd. B.E. and S. Dep. £2 2s.

South Africa.—Electric lighting power station and distribution network for Loxton Municipality, Cape Province. Dept. of Overseas Trade, Gt. George-st., S.W.1. (Ref. T.Y. 29657/39.)

JANUARY 17.

Belfast T.C.—Public air raid shelters. City Surveyor's Department (Engineering Section), Room 94, City Hall. Dep. £1 1s.

Stourbridge T.C.—Public air raid shelter in rock cellars, Duke-st. G. N. Maynard, B.E. and S. Dep. £2.

JANUARY 18.

***Beds E.C.**—Second section of proposed technical college, Luton. County Architectural Dept., Shire Hall, Bedford. Dep. £1 1s.

***Bristol T.C.**—Reconstruction of shop premises, 84 and 84a, Old Market-street. Messrs. Gleeds, quantity surveyors, 40, Corn-street. Dep. £2 2s.

Chesterfield R.D.C.—Two brick surface shelters with reinforced concrete roof and erection of nine trench shelters of BCF precast concrete unit type. J. B. Wikeley, E., Saltergate, Chesterfield. Dep. £1 1s.

JANUARY 19.

Barnet R.D.C.—Trench shelters for 500 persons. A. J. Wilshire, E. and S., Council Offices, Station-road., Boreham Wood, Herts. Dep. £2 2s.

Blyth T.C.—521 surface domestic air raid shelters. B.E.

Chingford T.C.—Conversion of eight-roomed house into two self-contained flats. B.E., Town Hall, The Ridgeway, Chingford, E.4.

Rochdale T.C.—Alterations and additions to Gale Inn, Whitworth-road; The Hollies, Manchester-road; Balderstone Hall; Norden council offices; 'bus depot, Melior-street; and also alterations in basement of Balderstone Hall. B.S.

Shipley E.C.—Reconstruction of lavatories at Saltaire-rd. boys' school. H. Dawson, Surveyor and Architect.

JANUARY 20.

Kildorrery.—Repairs to Kildorrery Dispensary, for North Cork Board of Health, etc. D. C. Murphy, secretary, County Hospital, Mallow.

JANUARY 22.

***Merton and Morden U.D.C.**—Nine brick surface shelters, accommodation 200 persons each, in neighbourhood of Morden tube station. E. and S. Dep. £1.

Reading C.B.—Small sanitary convenience additions to existing pavilion buildings in John Rabson recreation ground, Northumberland-av. B.S.

JANUARY 23.

Chelmsford T.C.—Above ground shelters in brick and concrete at schools. Vincent J. Willis, B.E. and S. Dep. £2 2s.

JANUARY 24.

***Croydon C.B.** — Reinforced concrete emergency equipment store, Old Town. B.E. Dep. £2 2s.

JANUARY 26.

Commissioners of Public Works.—Erection of St. Columbcille National School, Laghey Bar, Co. Donegal. Geo. P. Fagan (Sec.), Office of Public Works, Dublin. Dep. £1.

JANUARY 29.

***H.M.O.W.** — Erection of East Dean (Sussex) telephone exchange. Room 71, Ground Floor, H.M.O.W., S.W.1. Dep. £1.

FEBRUARY 1.

Norwich T.C.—Alterations and additions at Bull Close school. City Architect.

NO DATE.

***Southampton C.B.**—First-aid post at Borough Hospital. B.E. Dep. £2 2s.

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JANUARY 12.

Tunbridge Wells T.C.—Electrical installation at Municipal Block. P. Thomas, architect, 10, Cathedral-rd., Cardiff. Dep. £2 2s.

JANUARY 13.

South Cork Board of Public Health.—Repairing cottages in Cork, Bandon and Macroom districts. J. Hurley, sec., Board-room, Douglas-rd., Cork. Dep. £2.

West Riding C.C.—Provision and fixing of new wash basins at Adwick-le-st.: Woodlands council infants' school. A. J. Dempster, Divisional Clerk, Winchester House, Scot-la., Doncaster.

Wolverhampton C.B.—Heating and hot-water installation in connection with Warstones-rd. schools. H. B. Robinson, B.E. Dep. £1 1s.

JANUARY 15.

Berkhamsted U.D.C. — Decoration and general repair of houses known as "The Cottage" and "Midcot," Northchurch. S.

Lewes, Newhaven and Seaford Joint Hospital Board. — Internal decoration of administration block of isolation hospital, Newhaven. S., Council Offices, Newhaven.

JANUARY 16.

Durham C.C.—Electrical engineers for maintenance of electric air raid warning sirens in various parts of County. Wm. J. Merrett, C.E. and S., 43, Old Elvet., Durham.

JANUARY 17.

Middlesbrough T.C.—Internal redecorating of Dorman Museum. C. Gorman, Borough Engineer, Architect and Surveyor.

Rochdale C.B.—Internal painting work at Birch Hill hospital. B.S.

West Riding C.C.—Rewiring of electric light installation and protective covering to radiators and hot-water pipes in mental block at Batley institution; installation of refrigerating plant, Knaresborough Institution. A. Booth (A.), Acting West Riding Architect, County Hall, Wakefield.

JANUARY 19.

Belfast E.C.—Redecoration of the Central Hall of the College of Technology. Education Architect, Victoria-street.

Milltown (Marwood) Council.—Part painting, decorating and small repairs to 2, Council Houses, Milltown. S. P. Smith, Housing Manager, The Red House, Barnstaple R.D.C. Offices, Castle-st., Barnstaple.

JANUARY 20.

Ipswich E.C.—Repairs to Committee's property for one, two or three years, commencing on April 1, 1940. H. Armitage, Sec. for Education, Tower House.

JANUARY 22.

Leeds T.C.—Repairs to dwellings in groups 1-7 on various estates and repairing tarmacadam paths. R. A. H. Livett (A.), Housing Director, 26, Great George-st. Charge 5s.

Southport C.B.—Pointing to stonework, Cambridge Hall. B.E. Dep. £1 1s.

JANUARY 23.

Chertsey U.D.C.—Approximately 202 yds. lin. of galvanised diamond mesh fencing. 90 yds. lin. of similar fencing, two hand gates and one pair of wrought-iron gates, at Abbey Field. W. V. Davies, E. and S.

JANUARY 25.

Lichfield R.D.C.—Installation of electric lighting in six Council houses at Commonside, Gentleshaw. J. G. Rimand, E. and S.

***†Middlesbrough Diocesan Trustees.**—Installation of low-pressure hot-water heating apparatus and domestic hot-water supply at Eston South Bank Senior R.C. school. T. Crawford (L.), 82, Borough-road.

JANUARY 26.

Chislehurst and Sidcup U.D.C.—Repair and redecoration of 248 houses and 4 flats on various sites. Edgar Lawes, Council Offices, Main-rd., Sidcup.

Sutton and Cheam T.C.—Installation of electric lighting to public shelters, etc. N. H. Michell, B.E. and S. Dep. £2 2s.

JANUARY 27.

***Romford T.C.**—Painting of wrought-iron fencing, Raphael Park, Lodge Farm, Cottons recreation ground and Lawns recreation ground. B.E. and S. Dep. 10s. 6d.

JANUARY 31.

Liverpool T.C.—External painting of 5,371 houses, flats, shops, etc., on various estates. Architectural and Housing Department, Rose-la. school, Mather-av. Dep. £1 1s.

FEBRUARY 8.

Dublin.—Repairs, etc., to Administrative Building, Grangegorman, for Joint Committee. V. Kelly, architect, 87, Merrion-sq., Dublin. Dep. £5 5s.

MATERIALS, &c.

JANUARY 15.

Lichfield T.C.—Highway Materials. City E. and S.

Welwyn Garden City U.D.C. — Road materials. W. E. James, E. and S.

JANUARY 17.

Cambs. C.C.—Road materials. C.S., Cambridge.

Hull Corporation.—Highway materials. etc. City E.

JANUARY 19.

Felixstowe U.D.C.—Highway materials. A. Hugh Pavitt, S.

JANUARY 20.

West Riding C.C.—Road materials, etc. West Riding Surveyor, Wakefield.

JANUARY 22.

Bradford T.C.—Road materials, etc. City E. and S.

JANUARY 24.

***H.M.O.W.**—Supply of manhole covers and frames. Controller of Supplies, Dean Bradley House, Horseferry-rd., London, S.W.1.

JANUARY 29.

***Bristol T.C.**—Bricks. J. Nelson Meredith (F.), City Architect, Eagle House, Colston-avenue.

JANUARY 31.

***Chelsea B.C.**—Highway materials. J. A. Gough, B.S.

***Manchester T.C.**—Supply of bricks for one year ending March, 1941. R. H. Adcock, T.C.

Uxbridge U.D.C.—Road materials. E. E. T. Bolton, E. and S.

ENGINEERING, IRON AND STEEL.

JANUARY 12.

Leeds T.C.—Resurfacing tennis courts in various parks, etc. Director of Parks, Room 113, Civic Hall.

JANUARY 15.

Clitheroe R.D.C.—Sewerage works at Downham and at Chatburn. A. Brooksbank, E., 14, The Exchange, Bradford. Dep. £2 2s.

Godalming T.C.—Sewers and sewage disposal works. B.S. Dep. £2 2s.

South African Railways and Harbours Stores Department.—Bridgework. Sec. to Tender Board, Headquarter Offices, Room 420, Johannesburg.

Worthing T.C.—Reinforced concrete reservoir at Patching. B.E. Dep. £2 2s.

JANUARY 16.

Dublin Board of Public Health.—Sinking and lining of new dug well and erection of pump at Jordanstown (Oldtown), Co. Dublin. F. P. Russell, M.R.I.A.I., M.I.C.E.I., 6, Parnell-sq., Dublin.

Tredegar U.D.C. — Reinforced concrete reservoir at Trefil, and supply and delivery of pipes, etc., for high level water supply scheme. D. W. Davies, Engineer and Manager, Gas and Water Dept., Poplar-rd. Dep. £5.

JANUARY 18.

South African Railways and Harbours Administration.—Flat steel. Chief Stores Superintendent, New Park Station-chams., Rissik-st., Johannesburg.

JANUARY 27.

***†Kent C.C.**—Works in connection with installation of additional sewage disposal plant at County mental hospital, Chartham Down, near Canterbury. W. H. Robinson (F.), Springfield, Maidstone. Dep. £5 5s.

ROAD, SEWERAGE AND WATER WORKS.

JANUARY 13.

Manchester T.C.—Street works in Mazeppa-st., Cheetham; Trafalgar-st. East, Cheetham, from Mazeppa-st.; Barngate-rd. and Newby-dr., Northern Etchells. Highway Department (District Surveyors' Office), Town Hall. Dep. £1 1s.

JANUARY 15.

Mablethorpe and Sutton U.D.C.—Reconstruction of Wellington-rd., Mablethorpe. A. E. Baker, E. and S. Dep. £1 1s.

Morpeth R.D.C.—Laying of 1,115 lin. yds. of spun-iron water mains, complete with valves, hydrants, etc., in parish of Mitford. T. T. Watson, sanitary surveyor, Howard Castle, Dacre-st. Dep. £2 2s.

Wellingborough U.D.C. — Supply and delivery of 12-in. valves, air valves, etc., for cast-iron water main. R. Kilby, E. and S., Council Offices, Swanspool, Wellingborough.

West Bromwich C.B.—Reconstruction of approximately 340 yds. of High-st. from Bull-st. to New-st. B.E. and S. Dep. £2 2s.

JANUARY 16.

Bournemouth C.B.—Making-up Romney-rd. B.E. Dep. £1 1s.

Darlington T.C.—Supplying and laying 4,500 super. yds. of two-coat asphalt paving in Haughton-road. B.S., Town Hall, Darlington. Dep. £1 1s.

JANUARY 17.

Doncaster T.C.—(Contract No. 58). Intake housing estate, provision of sewers, etc.; (5) Wheatley Park Estate, tarmacadam surfacing work. R. E. Ford, estates surveyor, 3, Priory-place, Doncaster. Dep. £2 2s.

Public Appointments.

JANUARY 22.

***Sherborne U.D.C.**—General Clerk. E. J. Freeman, C.

JANUARY 27.

***East Rding C.C.**—Deputy County Architect. G. Macdonald, C., Beverley.

NO DATE.

***H.M.O.W.**—Builders' Cost Clerks, for Midlands and North of England. Chief Quantity S. (B.I.), Room 71, H.M.O.W., S.W.1.

BUILDINGS ILLUSTRATED

REUTERS AND P.A. BUILDING.

For the building at 85, Fleet-street, E.C.4, for Reuters and the Press Association, the general contractors were Messrs. Ashby and Horner, Ltd.. Principal sub-contractors and firms instructed direct by the clients were: Avon Rubber Co., Ltd., rubber flooring to staircases; Accordo Blinds, Ltd., blinds; Automatic Telephone Electric Co., private telephone system; Birmingham Guild, Ltd., staircase balustrades; Brown and Tawse, Ltd., staircases; Crittall Manufacturing Co., Ltd., steel windows, lantern lights, air raid shelter doors; Richard Crittall and Co., Ltd., kitchen equipment; Catesby, Ltd., linoleum; Chubb and Sons, Ltd., strong-room doors; John Edgington and Co., Ltd., flagstaff; John Freeman and McLeod, Ltd., Hopton Wood stone; Goodman Price, Ltd., demolition; J. W. Gray and Son, Ltd., lightning conductors and wireless masts; R. J. Goddard and Co., Ltd., asphalt; Higgins and Cattle, Ltd., electric lighting and power installations, under floor duct systems; Harcourts, Ltd., electric lighting fittings; Haywards, Ltd., pavement lights; Walter W. Jenkins and Co., Ltd., Travertine; Lamson Engineering Co., Ltd., pneumatic tubes; Magneta Time Co., Ltd., electric clocks; Rosser and Russell, Ltd.; low-pressure hot-water heating, ventilation, domestic hot-water, etc.; Siemens-Schuckert (Gt. Britain), Ltd., automatic tube post system; Sovex, Ltd., "Sovex" carrier; Smiths (London), ironmongery and door furniture; Stitson, White and Co., Ltd., plumbing and sanitary works; Sturtevant and Co., Ltd., vacuum cleaning plant; D. R. Smart and Son, Ltd., sound treatment; William Sugg and Co., Ltd., incinerator; T. T. Trading Co., Ltd., "Insulwood" ceilings; and Waygood-Otis, Ltd., passenger and service lifts.

The building was designed by Sir Edwin Lutyens, K.C.I.E., P.R.A., and Messrs. Smee and Houchin, F.R.I.B.A.

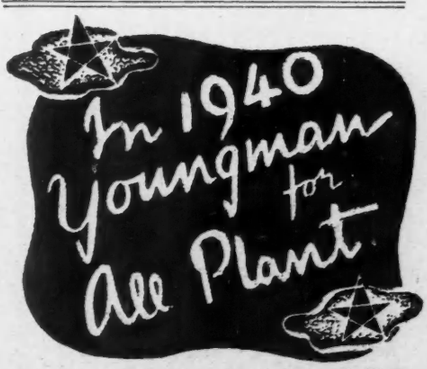
WESTMORLAND COUNTY HALL.

The main contractors for this work were Messrs. G. F. Martindale and Sons, Kendal, who also carried out reinforced concrete, masonry and all joinery works. Sub-contractors were: The Bath and Portland Stone Co., Ltd., Portland stone dressings; Lawrence Airey and Co., Kendal, hot-water and heating installations, plumbing and leadwork to turret; J. Storey and Sons, Kendal, plastering and tiling; Windermere Electricity Supply Co., electrical installation; J. Hine and Sons, Kendal, painting; W. Middleton, Kendal, steelwork; Limmer and Trinidad Asphalt Co., asphalt; John Tann, Ltd., strong-room door; Gillett and Johnson, Croydon, turret clock; James Gibbon, Ltd., bronze grilles and metal windows; Hollis Bros. and Co., Ltd., oak and pine flooring; The Cashmore Art Workers, bronze balustrades, railings, etc.; N. F. Ramsay and Co., Ltd., ironmongery; The Armstrong Cork Co., cork flooring; Hume, Atkins and Co., Ltd., lighting fixtures; Furdecor, Ltd., tapestry and curtains; Maple and Co., and Waring and Gillow, Ltd., Lancaster, chairs and furniture; and Eric Munday and Roanoid, Ltd., notice-boards and number plates, etc.

Mr. Verner O. Rees, F.R.I.B.A., was the architect.

PARKHILL SCHOOLS, ILFORD.

The general contractors for this work (illustrated on pages 63 to 65) were Messrs. Taylor Woodrow Construction Co., Ltd., of Southall. Sub-contractors and suppliers engaged were: Allen and Greaves, Ltd., tubular railings and gates; Art Pavements and Decorations, Ltd., terrazzo flooring; Aren's Controls, Ltd., concealed window gearing; Aygee, Ltd., glazing; British Reinforced Concrete, Ltd., reinforcing fabric; Bagnall and Sons, Ltd., painting and decorating; Crane, Ltd., hand pump; Cookes (Finsbury), Ltd., stainless steel strip; Cement Marketing Co., Ltd., "Cullamix" external stucco; Carter and Co., Ltd., tiling; Doulton and Co., Ltd., manhole covers, gullies, etc.; James Fitz-Gibbons, Ltd., drinking fountains; Falk, Stadelmann and Co., Ltd., lighting fittings; Gliksten Doors, Ltd., flush doors; General Asphalte, Ltd., playgrounds and paths; T. W. Gray and Son, lightning conductors; Holophane, Ltd., stage lighting and draperies; Heatrae, Ltd., hot-water heaters (electric); Henry Hope and Sons, Ltd., metal door frames; Hy-rib Sales, Ltd., suspended ceilings; L. A. King and Co., Ltd., glass brickwork; Korkoid Decorative Floors, Ltd., "Korkoid" flooring; London Asphalte Co., basement tanking; Merchant Adventurers, Ltd., lighting fitting; Mundet Cork Products, Ltd., cork tile flooring; Morris, Singer and Co., Ltd., opening tablet; Marston Valley Brick Co., Ltd., Fletton bricks; Noelite, Ltd., paving and steps; Norton Bros. and Co., Ltd., steelwork; Thomas Parsons, Ltd., paints and decorative schemes; Parker, Winder and Achurch, Ltd., cloakroom fittings and ironmongery; Pollard and Co., metal strip and anodized aluminium; Pel, Ltd., movable steps to stage; Pontifex and Emanuel, sanitary goods; Pilkington's, Ltd., glass; Ransome Bros., electrical installation; Ruberoid Co., Ltd., roofing material; Resmat Sales, asphalt and surfacing material; Arthur Scull, Ltd., plumbing; H. C. Slingsby, loft ladder; Smith's Clocks, Ltd., electric clocks; Joseph Sankey and Son, Ltd., metal skirtings; Stevens and Adams, Ltd., "Teaktile" and maple strip flooring; Stic. B. Sales, Ltd., paint on concrete; Turner's Asbestos, Ltd., asbestos rainwater goods; Truscon Floors, Ltd., pre-cast unit and in-situ R.C. roof structure; Thermacoust Products, Ltd., ceiling board and partition slabs; W. A. Telling, Ltd., plastering, grano. paving, screeding to roofs; Unity Heating, Ltd., electric heating equipment; Val de Travers, asphalt floor underlay; "Venesta" Products, Ltd., metal-faced plywood W.C. cubicles; Victoria Stone Co., Ltd., stonework; Williams and Williams, Ltd., metal windows; Woodhams, Ltd., stock bricks; and Yorkshire Copper Co., copper pipe and joints.



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CURRENT AND PROPOSED BUILDING WORK*

Arundel.—Council to be asked to approve scheme for 18 working-class cottages, Fitzalan-rd., promoted by F. L. Richardson.

Bath.—T.C. to accept tender for repair work at Norwood Farm.—Architect to proceed with alterations to fittings, shelving, etc., and decoration of rooms in Guildhall vacated by City Treasurer.—Plans passed: Nine detached houses, Chantry Mead-rd.; house, office and workshop, London-rd.; New Royal National Hospital for Rheumatic Diseases, Avon-st., Peter-st. and James-st. West.

Birmingham.—Estates Committee of T.C. reports that Bank Committee desires to acquire housing land at corner of Alcester-rd. South and Hawkhurst-rd., on Mill Pool Hill Estate, for branch bank premises.

Blackpool.—C.B. resolved to direct application to M.H. for consent to proceed on St. Walburgas-rd. housing estate with four houses at easterly end of Caton-grove; two at south-westerly junction of Shenstone-rd. and Scorton-av; and 16 on southerly side of Scorton-av.—Fencing to be placed round whole of Stanley junior school playing field.—Consent received to proceed with Derby bath—completion of carcase of remedial block, at £9,000.—Application to be made to M.T. for borrowing £10,194 for erecting second section of extensions of omnibus garage at Transport Department, Rigby-rd.—Plans passed: Corporation—tram shelter, Lowther-av., and bus shelter, Plymouth-rd

Brighouse.—T.C. approved: Structural alterations to "Robin Hood Inn," Wakefield-rd., Clifton, and "White Horse Inn," Leeds- and Whitehall-rd., Hipperholme, for S. Webster and Sons, Ltd., brewers, 57, Northgate, Halifax; loading dock to works, Bradford-rd., T. F. Firth and Sons, Ltd., Clifton Mills.

Carlisle.—City Council to ask M.H. to sanction borrowing of another £7,300 for completion of 188 houses.

Caterham and Warlingham.—U.D.C. approved: Layout and plot plan, 80 plots, Mayes-pl., Warlingham, T. G. Ryall and Son.

Chesterfield.—M.T. sanctioned £23,000 for Hasland-rd. widening scheme for T.C.

Chester-le-Street.—U.D.C. asking M.H. to sanction completion of 30 houses, Whitehill estate.

Colwick (Notts).—New parish church at Old Colwick, cost £6,300. Plans by C. E. Howitt (F.), of Nottingham.

Dagenham.—Essex C.C. decided to approve footpath and fencing works in New-rd., in vicinity of Beam bridge, at £265.

East Ham.—T.C. given authority for installation of special lights at main entrances to town hall and depots.

Essex.—C.C. recommend £460 for additional accommodation, Epping police station and Court-house, and new wharfing at south-west corner of Fullbridge, Maldon, along river frontage of properties known as 53 and 55, Market-hill, Maldon, at £800.

Exmouth.—Council received M.H. approval to borrow £5,600 for emergency repairs to the damaged sea-wall on Esplanade, at eastern end.

Felling-on-Tyne.—U.D.C. approved plans for rest-room and timber-drying shed at C.W.S. Cabinet Works, Pelaw. Plans by C.W.S. Architects' Dept., 90, Westmorland-rd., Newcastle-on-Tyne.—U.D.C. to apply for M.H. consent to build houses at Holly Hill for persons affected by Bill Quay clearance orders.

Gateshead.—Contract will be placed in near future for factory at Kingsway for North-Eastern Trading Estates, Ltd. Architects, Tasker and Child, Trinity-bldgs., New Bridge-st., Newcastle-on-Tyne.

Guisborough.—Architect for proposed factory extensions for Blackett, Hutton and Co., Ltd., steel founders, is H. C. Garbutt, 18, Albert-rd., Middlesbrough.

Jarrow.—L. J. Couves and Partners, Carliol House, Newcastle-on-Tyne, architects for extensions to power station, Beech-st., for North-Eastern Electric Supply Co., Ltd.

Leeds.—Work is expected to begin shortly on a three-storey factory and office building in Westgate, the westerly extension to The Headrow. The building, which has been designed by H. Jackman, of Leeds, is being erected by Styring Trust, Ltd., of Sheffield.

Liverpool.—Plans passed by Corporation: Two pram stores and A.R.P. shelter, St. Domingo-rd., for Corporation; alteration to bank, Chapel-av. and Walton-vale, Woolfall and Eccles, for Midland Bank, Ltd.; factory buildings, Flint-st. and Jordan-st., for F. H. Porter, Ltd.; conversion of college into hospital, Rose-brow and Gateacre-brow, Wm. Ellis, for Sisters of Charity of St. Vincent de Paul; extension to garage and factory, Derby-pl., Gilbert Fraser, for Paton Calvert and Co., Ltd.; large wood-framed store building, Marybone and Cavendish-st., Medcalf and Medcalf, for Calthrop Bros., Ltd.; alteration to form workshop premises, 171-181, Whitefield-rd., W. Braithwaite, for Barker and Dobson; block of sanitary accommodation and air raid shelter, Burlington-st. and Titchfield-st., for Corporation; store building, Edgar-st. and Bow-st., Wm. Hill, for Hy. Hill and Co., Ltd.; extension to factory, 17, Brasenose-rd., W. Pecorini, for S. H. and E. Hill; first aid post and decontamination centre, Binns-rd., W. P. Horsburgh, for Meccano, Ltd.; alteration to form garage with office over, Mossley Hill-rd. North, McCormick and Lunt, Builders, for Liverpool College; alteration to warehouse, Window-la., King, Taudwin and Grigson, Ltd., for Garston Bottle Co., Ltd.; alteration to form factory, Marybone and Stockdale-st., Richard Owens and Son, for Rowe Bros. and Co., Ltd.

London.—Miners' Welfare Committee, Romney House, Tufton-st., London, S.W.1, are about to invite building tenders for pit-head baths at Valleyfield (Fife), for 1,100 men; Hapton Valley (Lancashire), for 310 men; Shireoaks (South Yorkshire), for 1,080 men; and Elliot (South Wales), for 1,632 men.

Manchester.—T.C. recommend drainage facilities at airport, at £1,800; reconstruction of No. 4 nurses' home at Withington Hospital, £3,200; additional temporary shops at Crossacres-rd, Wythenshawe estate, £872; additions to sewage disposal scheme in connection with administrative buildings at Ringway Airport.—City E. to proceed with the necessary work of rearrangement of office accommodation in town hall, £2,250.—Plans passed: Conversion of church into factory, Queen's-rd. and Catherine-st., Cheetham; additions to bacon-curing factory, Gibson's-pl., off Carnarvon-st., Cheetham; proposed extension to existing foundry, Albion-st., Thomas-st., and Lewis-st., Miles Platting; additions, "Great Western Inn," 77, Sloane-st. and Great Western-st.; store shed to warehouse, Pollard-st. and Caledon-st., Ancoats; proposed rebuilding of "Half Moon Inn," Holland-st., off Bradford-rd.

Morecambe and Heysham.—T.C. approved: Commercial garage off Back Avondale-rd. Harrison and Sons (Morecambe), Ltd., Alexandra-rd.

Morpeth.—C. Franklin Murphy, Lloyds Bank-chams., architect for proposed café and shops.

Newcastle-under-Lyme.—T.C. approved: Additions at St. Andrew's Hall, Porthill, Rev. L. R. Gunner.

Northants.—E.C. propose health centres at Rushden Moor-rd., Rothwell, and Rock-st., Wellingborough. Plans by G. H. Lewin (F.), County Architect, Northampton.

Ripon.—City Council agreed to apply for sanction to borrow £7,500 for reservoir.

Sheffield.—E.C. to borrow £4,000 for Victoria-st. sub-station.—T.C. approved: Sub-station to works, Sheffield-rd., Tinsley. Firth-Vickers Stainless Steels, Ltd., Staybright Works.

South Shields.—T. A. Page, Son and Bradbury, 75, King-st., prepared plans for rebuilding 18 cottages, Broughton-st., for Master Mariners' Annuity Society.—T.C. submitting for M.H. approval £3,000 plan for shopping centre, Little Horsley Hill estate.—T.C. received 50 per cent. grant towards £6,500 scheme for electrical installation and furnishings, etc., at Maternity Hospital.—Managers of Holy Trinity school to carry out improvements.

Southend.—T.C. approved: Alterations, Seaside Mission Hall, Milton-st., for Trustees.

Stoke-on-Trent.—T.C. approved: Parkers (Burslem) Brewery, Ltd., "Crown and Anchor" inn, Wood-st., corner Church-st., alterations; Fenton Working Men's Club, Fountain-st., Fenton, premises; Wm. Walker and Sons, Brook-st., Hanley, workshop; Montague Burton, Ltd., 6, Piccadilly, Hanley, alterations; Henry's, Ltd., 3, Parliament-row, Hanley, shop premises; H. W. Cartlidge, off Queen's-rd, Penkhull, 24 houses; British Aluminium Co., Ltd., Redmills-rd., Milton, additions to offices; Peake, High-la., Burslem, garage and filling station; Stoke-on-Trent Rotary Club, Hanley Park, Victoria-rd., Hanley recreation pavilion.

Tynemouth.—Architects for proposed electric sub-station at Billy Mill, for North-Eastern Electric Supply Co., Ltd., are L. J. Couves and Partners, Carliol House, Newcastle-on-Tyne.

Wood Green.—T.C. approved: F. F. Tomlin, six flats, Devonshire Hill-la.

Woolwich.—B.C. approved: Royal Arsenal Co-operative Society, Ltd., messroom and coal bunker, Commonwealth-bldgs., Woolwich Church-st., Woolwich; F. G. Keane, Standard Telephones and Cables, Ltd., store building, Henley-rd., North Woolwich; T. Carr, "Garthowen," Hockering Gardens, Woking (on behalf of Rev. Pierce Goulding), vicarage, 11-14, Old Mill-rd., Plumstead.

York.—T.C. approved: Malton Investment Trust, premises, Davygate and New-st.; J. J. Hunt, Ltd., additions, "Little John" hotel, Castlegate.

The Complete Service in Reinforced Concrete

THE TRUSSED CONCRETE STEEL CO. LTD.

HORSEFERRY HOUSE · WESTMINSTER · S.W.1

VICTORIA 4477 (12 LINES)

4.445.

* See also List of Contracts Open.

** In these lists every care is taken to ensure that information given is accurate and up to date, but it may occasionally happen that, owing to building owners taking the responsibility of commencing work before plans are finally approved by the local authorities, "proposed" works at the time of publication have been actually commenced.

RATES OF WAGES IN THE BUILDING TRADE

AS AND FROM 1st DECEMBER 1939,

[Every endeavour is made to ensure accuracy, but we cannot be responsible for errors]

	Crafts-men.	Lab-ourers.
Aberavon	1/8	1/3½
Aberdare	1/8	1/3½
Abergavenny	1/7½	1/2½
Abingdon	1/6½	1/2
Accrington	1/8	1/3½
Aldeburgh	1/4½	1/0½
Aldershot	1/6½	1/2
Alfreton	1/8	1/3½
Alnwick	1/7½	1/2½
Altrincham	1/8	1/3½
Amble	1/7½	1/2½
Amersham	1/6½	1/2
Ammanford	1/8	1/3½
Andover	1/6	1/1½
Ardingley	1/6	1/1½
Arundel	1/6	1/1½
Ascot	1/6	1/1½
Ashby-de-la-Zouch	1/6½	1/2
Ashford (Kent)	1/6	1/1½
Ashford (Middlesex)	1/8	1/3½
Ashington	1/7½	1,2½
Ashtead	1/8	1/3½
Ashton-under-Lyne	1/8	1/3½
Aylesbury	1/6	1/1½
Aylsham	1/5	1/1
Bagshot	1/6	1/1½
Banbury	1/6	1/1½
Barnsley	1/8	1/3½
Barnstaple	1/6	1/1½
Barrow-in-Furness	1/8	1/3½
Barry	1/8	1/3½
Basingstoke	1/6	1/1½
Bath	1/7½	1/2½
Batley	1/8	1/3½
Beaconsfield	1/6½	1/2
Beccles	1/4½	1/0½
Bedford	1/7½	1/2½
Berkhamsted	1/6	1/1½
Berwick	1/7½	1/2½
Beverley	1/8	1/3½
Bexhill-on-Sea	1/6½	1/2
Bideford	1/6	1/1½
Biggleswade	1/5½	1/1½
Billericay	1/5½	1/1½
Birchington	1/6	1/1½
Birkenhead	‡§1/10½	¶
Birmingham	1/8	1/3½
Bishop Auckland	1/8	1/3½
Bishops Stortford	1/7	1/2½
Blackburn	1/8	1/3½
Blackpool	1/8	1/3½
Blyth	1/8	1/3½
Bognor Regis	1/6	1/1½
Bolton	1/8	1/3½
Bournemouth	1/7	1/2½
Bracknell	1/6	1/1½
Bradford	1/8	1/3½
Bradford-on Avon	1/5*	1/1
Braintree	1/6	1/1½
Brentwood	1/7½	1/2½
Bridgwater	1/6½	1/2
Bridlington	1/7½	1/2½
Brighouse	1/8	1/3½
Brighton	1/7	1/2½
Bristol	1/8	1/3½
Broadstairs	1/6	1/1½
Bromsgrove	1/7½	1/2½
Buckley	1/8	1/3½
Bungay	1/4	1/0½
Burnham-on-Crouch	1/4½	1/0½
Burnley	1/8	1/3½
Burslem	1/8	1/3½
Burton-on-Trent	1/8	1/3½
Bury	1/8	1/3½
Bury St. Edmunds	1/5½	1/1½
Buxton	1/7½	1/2½
Byfleet	1/6½	1/2
Cambridge	1/7½	1/2½
Canterbury	1/6	1/1½
Cardiff	1/8	1/3½
Carlisle	1/8	1/3½
Carnforth	1/8	1/3½
Castleford	1/8	1/3½
Caterham	1/8	1/3½
Chard	1/5*	1/1
Chatham	1/7	1/2½
Chelmsford	1/7½	1/2½
Cheltenham	1/7	1/2½
Chepstow	1/7	1/2½
Chertsey	1/7	1/2½
Chester	1/8	1/3½
Chesterfield	1/8	1/3½
Chichester	1/6	1/1½
Chorley	1/8	1/3½
Cirencester	1/5½*	1/1½
Clacton	1/6	1/1½
Cleveleys	1/8	1/3½
Clitheroe	1/8	1/3½
Cobham (Surrey)	1/7	1/2½
Colchester	1/7½	1/2½
Colwyn Bay	1/7	1/2½
Congleton	1/7½	1/2½
Coventry	1/8	1/3½
Cranbrook	1/6	1/1½
Cranleigh	1/6	1/1½
Crawley	1/6	1/1½
Crewe	1/7½	1/2½
Cromer	1/5	1/1
Crowborough	1/6	1/1½
Cuckfield	1/6	1/1½
Darlington	1/8	1/3½
Darwen	1/8	1/3½
Daventry	1/6½	1/2
Deal	1/6	1/1½
Denbigh	1/6½	1/2
Derby	1/8	1/3½
Devizes	1/4½*	1/0½
Dewsbury	1/8	1/3½
Didcot	1/6	1/1½
Diss	1/4½	1/0½
Doncaster	1/8	1/3½
Dorchester	1/5½*	1/1½
Dorking	1/6½	1/2
Dover	1/6	1/1½
Dovercourt	1/6	1/1½
Driffield	1/6½	1/2
Droitwich	1/7½	1/2½
Dudley	1/8	1/3½
Dunstable	1/6½	1/2
Durham City	1/8	1/3½
Eastbourne	1/7	1/2½
E. Glam. (Mon. Val.)	1/8	1/3½
East Grinstead	1/6	1/1½
Edenbridge	1/6	1/1½
Ely	1/4½	1/0½
Epping	1/8	1/3½
Exeter	1/7½†	1/2½
Exmouth	1/6½	1/2
Fakenham	1/5	1/1
Falmouth	1/6½	1/2
Fareham	1/7	1/2½
Faversham	1/6	1/1½
Felixstowe	1/7	1/2½
Filey	1/6½	1/2
Fleetwood	1,8	1/3½
Flint	1/8	1/3½
Folkestone	1/6	1/1½
Frinton-on-Sea	1/6	1/1½
Frome	1/5*	1/1
Gainsborough	1/7	1/2½
Gateshead	1/8	1/3½
Gillingham (Kent)	1/7	1/2½
Glossop	1/8	1/3½
Gloucester	1/7½†	1/2½
Godalming	1/6	1/1½
Goole	1/8	1/3½
Gosport	1/7½	1/2½
Grantham	1/7	1/2½
Gravesend	1/7½	1/2½
Great Yarmouth	1/6	1/1½
Grimsby	1/8	1/3½
Guildford	1/6	1/1½
Guilsborough	1/6½	1/2
Halifax	1/8	1/3½
Hanley	1/8	1/3½
Harpenden	1/7	1/2½
Harrogate	1/8	1/3½
Hartlepools	1/8	1/3½
Harwich	1/6	1/1½
Haslemere	1/6	1/1½
Hastings	1/6	1/1½
Hatfield	1/7½	1/2½
Haywards Heath	1/6	1,1½
Hednesford	1/7½	1/2½
Hemel Hempstead	1/7	1/2½
Henley-on-Thames	1/6	1/1½
Hereford	1,6*	1/1½
Herne Bay	1/6	1/1½
Hertford	1,7½	1/2½
Heysham	1,8	1/3½
Hitchin	1/6½	1/2
Hoddesdon	1/7½	1/2½
Holt (Norfolk)	1/4½	1/0½
Horley	1/6	1/1½
Horsham	1/6	1/1½
Horwich	1/8	1/3½
Huddersfield	1/8	1/3½
Hull	1/8	1/3½
Hunstanton	1/5	1/1
Huntingdon	1/5½	1/1½
Ilfracombe	1/6	1/1½
Ingatestone	1/6½	1/2
Ipswich	1/7½	1/2½
Isle of Thanet	1/6	1/1½
Isle of Wight	1,5	1/1
Keighley	1/8	1/3½
Kenilworth	1/8	1/3½
Kettering	1/7½	1,2½
Kidderminster	1/7½	1/2½
King's Lynn	1/6	1/1½
Kirkham	1/8	1,3½
Knowle	1/7½	1/2½
Lancaster	1/8	1/3½
Leamington	1/8	1/3½
Leatherhead	1/7	1/2½
Leeds	1/8	1/3½
Leicester	1/8	1/3½
Leighton Buzzard	1/5	1/1
Letchworth	1/6½	1/2
Lewes	1/6	1/1½
Lichfield	1/7	1/2½
Lincoln	1/8	1/3½
Littlehampton	1/6	1/1½
Liverpool	‡§1/10½	¶
Llandudno	1/7	1/2½
Llanelly	1/8	1/3½
London—		
12 m. radius	1/9½*	1/4½
12-15 m. radius	1/9 *	1/4
Long Eaton	1/8	1/3½
Longton	1/8	1/3½
Loughborough	1/8	1/3½
Louth	1/6½	1/2
Lowestoft	1/6	1/1½
Luton	1/7½	1/2½
Macclesfield	1/7½	1/2½
Maidenhead	1/6½	1/2
Maidstone	1/6½	1/2
Malvern	1/6½	1/2
Manchester	1/8	1/3½
Manningtree	1/5	1/1
Mansfield	1/8	1/3½
March	1/5	1/1
Margate	1/6	1/1½
Market Harborough	1/7	1/2½
Matlock	1/6½	1,2
Melton Constable	1/4½	1/0½
Melton Mowbray	1/7	1/2½
Merthyr	1/8	1/3½
Middlesbrough	1/8	1/3½
Middleton	1/8	1/3½
Middlewich	1/7½	1/2½
Milford Haven	1/6½	1/2
Morecambe	1/8	1/3½
Morley	1/8	1/3½
Mundesley	1/5	1/1
Nantwich	1/7½	1/2½
Nelson	1/8	1/3½
Newark-on-Trent	1/7½	1/2½
Newbury	1/6	1/1½
Newcastle-on-Tyne	1/8	1/3½
Newcastle-u.-Lyme	1/8	1/3½
New Forest	1/5	1/1
Newmarket	1/6	1/1½
Newport, Mon.	1/8	1/3½
Newport Pagnell	1/6	1/1½
Northampton	1/8	1/3½
Norwich	1/8	1/3½
Nottingham	1/8	1/3½
Nuneaton	1/8	1/3½
Oakham	1/6½	1/2
Oldham	1/8	1/3½
Ormskirk	1/8	1/3½
Oxford	1/7½	1/2½
Oxted	1/6½	1/2
Paignton	1/7½	1/2½
Peterborough	1/7½	1/2½
Plymouth	1/8	1/3½
Pontefract	1/8	1/3½
Pontypridd	1/8	1/3½
Port Talbot	1/8	1/3½
Portsmouth	1/7½	1/2½
Preston	1/8	1/3½
Pulborough	1/6	1/1½
Ramsgate	1/6	1/1½
Reading	1/7½	1/2½
Redditch (Northern)	1/7	1/2½
Redhill	1/6½	1/2
Ripon	1/6½	1/2
Rochdale	1/8	1/3½
Rochester	1/7	1/2½
Rugby	1/8	1/3½
Saffron Walden	1/5	1/1
St. Albans	1/7½	1/2½
St. Helens	1/8	1/3½
St. Neots	1/5	1/1
Salisbury City	1/5*	1/1
Salisbury Plain	1/7*	1/2½
Sawbridgeworth	1/6½	1/2
Saxmundham	1/4½	1/0½
Scarborough	1/7½	1/2½
Scunthorpe	1/8	1/3½
Selby	1/8	1/3½
Sevenoaks	1/6½	1/2
Sheerness	1/5½	1/1½
Sheffield	1/8	1/3½
Shipley	1/8	1/3½
Shoeburyness	1/7½	1/2½
Shoreham	1/7	1/2½
Shrewsbury	1/7	1/2½
Sittingbourne	1/6	1/1½
Skegness	1/7	1/2½
Sleaford	1/6½	1/2
Slough	1/7	1/2½
Southampton	1/7½	1/2½
Southend-on-Sea	1/7½	1/2½
Southport	1/8	1/3½
South Shields	1/8	1/3½
Spalding	1/6	1/1½
Stafford	1/7½	1/2½
Staines	1/7	1,2½
Stamford	1/7	1/2½
Stevenage	1/6½	1/2
Stockport	1/8	1/3½
Stockton-on-Tees	1/8	1/3½
Stoke-on-Trent	1/8	1/3½
Stourbridge	1/7½	1/2½
Stourport	1/7½	1/2½
Stowmarket	1/5	1/1
Stratford-on-Avon	1/7	1/2½
Stroud	1/6½†	1/2
Sunderland	1/8	1/3½
Sutton Coldfield	1/8	1/3½
Swaffham	1/4½	1/0½
Swanage	1/6*	1/1½
Swansea	1/8	1/3½
Swindon	1/6½*	1/2
Tamworth	1/7½	1/2½
Taunton	1/6	1/1½
Tenterden	1/6	1/1½
Thames Haven	1/8	1/3½
Thetford	1/5½	1/1½
Thorpe Bay	1/7½	1/2½
Todmorden	1/8	1/3½
Tonbridge	1/6½	1/2
Torquay	1/7½	1/2½
Totnes	1/6	1/1½
Trowbridge	1/5*	1/1
Truro	1/5	1/1
Tunbridge Wells	1/6½	1/2
Uppingham	1/6½	1/2
Uttoxeter	1/6½	1/2
Wakefield	1/8	1/3½
Walsall	1/8	1/3½
Walsden	1/8	1/3½
Walton-on-Naze	1/6	1/1½
Ware	1/7½	1/2½
Warminster	1/5*	1/1
Warrington	1/8	1/3½
Warwick	1/8	1 3½
Wellingborough	1/7½	1,2½
Welwyn	1/7	1/2½
Welwyn Gar. City	1,8	1/3½
Wells (Norfolk)	1/4½	1/0½
West Bromwich	1/8	1,3½
Westcliff-on-Sea	1/7½	1/2½
Weston-super-Mare	1/7	1 2½
Weybridge	1/7	1/2½
Weymouth	1/5½*	1/1½
Whitby	1/7	1/2½
Whitstable	1/6	1/1½
Widnes	1/8	1/3½
Wigan	1/8	1,3½
Wigton	1/6½	1/2
Willington	1/7½	1/2½
Wilmslow	1/8	1/3½
Winchester	1/6½	1/2
Windermere	1/6½	1/2
Windsor	1/7	1/2½
Wisbech	1/5½	1/1½
Witham	1/6	1,1½
Woking	1/6½	1/2
Wokingham	1/6	1/1½
Wolverhampton	1/8	1/3½
Woodbridge	1/5½	1/1½
Worcester	1/7½	1/2½
Workington	1/6½	1/2
Worksop	1/7½	1/2½
Worthing	1/6	1/1½
Wrexham	1/7½	1/2½
Wroxham	1/5½	1/1½
Wycombe	1/6½	1/2
Wymondham	1/5	1/1
Yeovil	1/6½	1/2
York	1/8	1/3½

* Painters 1d. less than other Craftsmen. † Painters ½d. less than other Craftsmen. ‡ Plasterers 1/11.

¶ Tradesman's Labourers 1/4½ Navvies and General Labourers, 1/4½.

§ Joiners, Plumbers, Bricklayers, Tilers and Masons receive 2/- per week or 4d. per day Tool Money.

For Building Trade Wages in Scotland, see page 87.

PRICES CURRENT OF MATERIALS*

Note: Owing to the exceptional circumstances which prevail at the present time prices of materials should be confirmed by inquiry. The softwood prices are the maxima established by the Timber Control Department. At present linseed oil and genuine spirits of turpentine can only be supplied in cans in small quantities. Lead can only be obtained for Government or A.R.P. work and urgent repairs.

BRICKS, &c.

Delivered to site, City and Central Area, Full Lorry Loads.

	£ s. d.
Best Stocks	4 15 0
Second Hard Stocks	4 8 0

Per 1,000. Delivered at London Goods Stations.

2½ in. Phorpres.	King's Cross Station. per 1,000. s. d.	To sites in W.C. District. per 1,000. s. d.
Pressed bricks	46 3	50 6
Cellular bricks	46 3	50 6
Keyed bricks	48 3	52 6
Cellular Keyed bricks	48 3	52 6
Rustic bricks	*66 3	*70 6
Cellular Rustic bricks	*66 3	*70 6
Single Bullnose	64 3	68 6
White bricks	*66 3	*70 6
Sandfaced bricks	—	75 6

* Subject to a special discount of 2s. per 1,000 ft. accompanied by order for Pressed. £ s. d.

White Midhurst Facing Bricks (delivered London site)	3 12 6
Best blue Pressed Staffs	8 6 6
Do. Bullnose	8 16 6
Blue Wire Cuts	7 4 0

Best Stourbridge Fire Brick :—
2½ in. ..... 7 15 0 3 in. 8 15 0

GLAZED BRICKS—

Best White Ivory and Salt Glazed Stretcher	24 0 0	D'ble Str'tch'rs	32 10 0
		D'ble Headers	29 10 0
Headers	23 10 0	One side & two ends	33 10 0
		Two sides & one end	34 10 0
Quoins, Bullnose and 4½in. Flats	30 10 0	Splays and Squints	31 0 0

Second Quality, £1 per 1,000 less than best. Cream and buff, £2 extra over white. Other colours. Hard Glaze, £5 10s. extra over white.

PARTITION SLABS.

Delivered London Area.

"PHORPRES" HOLLOW PARTITION BLOCKS.

2" per yd. sup.	2 3	3" per yd. sup.	2 9
2½" " "	2 6	4" " "	3 1

CLINKER CONCRETE.

2" per yd. sup.	1 6	3" per yd. sup.	2 0
2½" " "	1 8	4" " "	2 4

CRANHAM TERRA COTTA.

2" per yd. sup.	3 0	3" per yd. sup.	3 8
2½" " "	3 6	4" " "	4 7

HEMPSTEAD—KEYED TWO SIDES.

12" x 9" x 2"	2 6	12" x 9" x 3"	3 0
12" x 9" x 2½"	2 9	12" x 9" x 4"	3 9

SAND.

Per yard super d/d.	Free on site, London.
Thames Ballast 7	9 per yd.
Pit Ballast 7	3 " " delivered
Pit Sand 9	9 " " 2 miles
Washed Sand 10	9 " " radius
¾in. Shingle 8	0 " " Paddington.
¾in. Broken Brick 12	0 " "
Pan Breeze 8	3 " "

CEMENT.

Best British Portland Cement. Standard Specification delivered London Area in jute sacks (11 to ton), or paper bags (20 to ton) free (non-returnable) :— £ s. d.

4 ton loads and upwards site	Per ton	2 5 0
1 ton to 4 tons site		2 8 0
Alongside Vauxhall in 80-ton lots		2 2 6
"Ferrocrete" Rapid Hardening Cement :—		
4 ton loads and upwards site		2 11 0
1 ton to 4 tons site		2 14 0
Alongside Vauxhall in 80-ton lots		2 8 6

Stores in Reserved Bins at Works 1/6 ton extra.

NOTE.—Jute sacks are charged 1s. 6d. each and credited 1s. 6d. nett, if returned in good condition within three months, carriage paid.

"Aquacrete" Water Repellent, "Blue Circle" Cement, 30/- per ton extra on ordinary "Blue Circle" Portland Cement prices.

"Colorcrete" Nos. 1 and 2 Coloured Rapid Hardening Portland Cement in 1-cwt. paper bags free (non-returnable) in 1-ton lots and upwards site 3 14 0

"Colorcrete," not rapid-hardening, in 1-cwt. paper bags free (non-returnable), according to colour, from £7 to £15 10s. per ton.

"Snowcrete" White Portland Cement in 1-cwt. paper bags free (non-returnable)

1 ton and upwards site	8 15 0
Super Cement (Waterproof) paper bags free	3 15 0
Roman Cement £6 15 Keene's Cement, White	5 10 0
Parian Cement £5 10 " " Pink	5 2 6

Cementone Colours for cement according to tints per cwt. from £2 16s. 0d.

PLASTER.

	£ s. d.		£ s. d.
Coarse, Pink	3 0 0	Sirapite, Coarse	3 10 0
" White	3 10 0	" Finish	3 18 0
Pioneer	3 10 6		
Super Carbo	2 7 6	4-ton loads and over London Area, paper bags free.	
Carbo Setting	2 12 6		
Best Ground Blue Lias Lime	1 17 6	Grey Stone Lime	2 2 0
		Chalk Lime	2 2 0
Granite Chippings	1 5 0	Hair per cwt.	2 7 6

NOTE.—Sacks are charged 1s. 9d. each, and credited 1s. 6d., if returned in good condition within three months, carriage paid.

Stourbridge Fireclay in sacks 37s. per ton at rly. dep.

STONE.

	s. d.
BATH STONE.—Delivered in railway trucks at Westbourne Park, Paddington, G.W.R., or South Lambeth, G.W.R., per ft. cube	2 10½
BEER STONE—RANDOM BLOCK—	
Free on rail at Seaton Station. per ft. cube	2 3
Delivered free on rail Nine Elms, S.R. "	3 1½
Selected approximate size one way, 1d. per cubic ft. extra, selected approximately three sizes or for special work, 3d. per cubic ft. extra.	
PORTLAND STONE—	
Brown Whitbed, in random blocks of 20 ft. average, delivered in railway trucks at Nine Elms, S. Rly., South Lambeth Station, G.W.R., and Westbourne Park, Paddington, G.W.R., per ft. cube	4 5
Do. do. delivered on road waggons as above stations, per ft. cube	4 6
White basebed, 3d. per ft. cube extra.	
NOTE.—1d. per ft. cube extra for every ft. over 20 ft. *average* and ½d. beyond 30 ft.	
HOPTON-WOOD STONE—	
F.O.R. Quarries, Wirksworth, Derbyshire, Random blocks from 10 ft. and over P.ft.cb.	14 0
Sawn two sides	22 6
HOPTON-WOOD STONE—	
Sawn three or four sides	27 9
YORK STONE, BLUE—*Robin Hood Quality.*	
Delivered at any Goods Station, London.	
6 in. sawn two sides landings to sizes (under 30 ft. super) per ft. super	5 0
6 in. rubbed two sides, ditto "	5 6
3 in. sawn two sides slabs (random sizes) "	2 3½
2 in. to 2½ in. sawn one side slabs (random sizes) (paving) "	1 6½
1½ in. to 2 in., ditto. "	1 3½
HARD YORK—	
Delivered at any Goods Station, London.	
Scrappled random blocks. per ft. cube	6 3
6 in. sawn two sides landings to sizes (under 40 ft. super) per ft. super	5 1½
6 in. rubbed two sides, ditto "	6 1½
4 in. sawn two sides slabs (random sizes) "	3 1½
3 in. ditto ditto "	2 5
2 in. self-faced random flags Per yd. super	7 6

CAST STONE.

Delivered in London are in full van loads, per ft. cube: Plain, 7s. 6d. Moulded, 8s. 6d. Sills, 10s. 0d.

HARD WOOD.

1 INCH AND UP THICK.

Average price for prime quality.	£ s. d.
Dry Austrian Wainscot, per ft. cube	0 17 0
Dry American and/or Japanese Figured Oak, per ft. cube 10 0 to	0 12 6
Dry American and/or Japanese plain Oak, per ft. cube	0 11 6
Dry sq. edged Honduras Mahogany, per ft. cube	0 15 0
Dry log-cut Honduras Mahogany, per ft. cube 12 6 to	0 16 0
Dry Cuba Mahogany, per ft. cube	0 18 0
Dry Teak, per ft. cube	0 14 0
Dry American Whitewood, per ft. cube	0 10 6
Dry Australian Walnut, per ft. cube	0 17 0
Dry Queensland Silky Oak, per ft. cube	0 11 0
Dry African Mahogany, per ft. cube	0 10 0
Dry African Whitewood, per ft. cube	0 8 0
Dry English Wainscot Oak, per ft. cube	0 16 0
Best Scotch Glue, per cwt.	3 0 0
Liquid Glue, per cwt. 4 7 0 to	5 10 0

SOFT WOOD.

GOOD BUILDING DEAL.

Inches.	Per stan.	Inches.	Per stan.
4 × 11	£38 10	3 × 6	£31 10
4 × 9	38 10	3 × 11	38 10
4 × 8	35 10	2 × 11	38 10
4 × 7	35 10	3 × 9	37 10
3 × 8	32 10	2½ × 9	37 10
3 × 7	31 10	3 × 4½	30 0
2½ × 7	31 10	3 × 4	30 0

Having secured the Contract— What about the Steel Scaffolding?

TUBULAR

—S & C—

SCAFFOLDING

For the lowest Prices apply to the Oldest Firm in The Scaffolding Trade.

STEPHENS & CARTER LTD.

The British Steel Scaffolding Co.

731-761, HARROW RD., N.W.10.

Telephone No. Ladbroke 1191 (6 lines).

PLANED BOARDS.

1 × 11	£43 10	1 × 9	£39 10

PLAIN EDGE FLOORING.

Inches.	Per sq.	Inches.	Per sq.
⅝	22/6	1¼	38/-
⅞	25/-	1½	42/6
1	28/6		

TONGUED AND GROOVED FLOORING.

Inches.	Per sq.	Inches.	Per sq.
1	29/-	⅝	23/-
1¼	38/6	¾	25/-
1½	43/-	1	29/-

Ins. BATTENS.	s. d.	SAWN LATHS.	s. d.
¾ × 2 per 100 ft.	2 9	Per bundle	2 6

SLATES.

First quality slates from Penrhyn or Portmadoc. carriage paid in full truck loads to London Rate Station. Per 1,000 actual.

	£ s. d.		£ s. d.
24 by 12	31 5 0	18 by 10	16 10 0
22 by 12	26 5 0	18 by 9	14 17 6
22 by 11	23 12 6	16 by 10	14 7 6
20 by 12	23 2 0	16 by 8	11 6 0
20 by 10	20 15 0		

TILES.

Delivered at London rate stations in full truck loads of not less than 6 tons. Per 1,000 f.o.r. London.

	£ s. d.
Best machine-made tiles from Broseley or Staffordshire district	4 2 6
Ditto hand-made ditto	4 17 6
Ornamental ditto	5 2 6
Hip and valley tiles (per dozen) Hand-made	0 8 6
Machine-made	0 8 0

METALS.

JOISTS, GIRDERS, &c., TO LONDON STATION PER TON—

	£ s. d.
R.S. Joists, cut and fitted	£16 0 0
Plain Compound Girders	19 0 0
" " Stanchions	21 0 0
In Roof Work	25 0 0

NOTE.—These prices are for standard pieces and not special pieces of an awkward nature.

MILD STEEL ROUNDS.—To London Stations, per ton.

Diameter.	£ s. d.	Diameter.	£ s. d.
¼ in.	16 12 6	⅜ in. to ½ in.	15 2 6
⅝ in.	15 12 6	⅝ in. to 2¾ in.	14 12 6

WROUGHT-IRON TUBES AND FITTINGS—

(Discount off List for lot of not less than £10 net value delivered direct from Works, 2½ per cent. less above gross discounts, carriage forward, if sent from London Stocks.)

	Standard Wrot. Mild Steel Tubes. and Tubulars. Sizes. ⅛in. to ⅜in.	Standard Wrot. Mild Steel Tubes. and Tubulars. Sizes. ½in. to 2in.	Standard Flanges. Sizes. ⅛in. to 2in.	Standard Fittings.
	%	%	%	%
Gas	60	65	62½	58½
Water	57	62½	62½	55
Steam	53½	58½	51½	50
Gal. gas	50	55	51½	48½
Galv. water	45	50	43½	43½
Galv. steam	38½	43½	38½	40

C.I. HALF-ROUND GUTTERS—London Prices ex Works.

Per yd. in 6 ft. lengths.	Gutters.	Angles and Nozzles.	Stop-Ends
3 in.	1/2½	1/-	4d
3½ in.	1/3½	1/1½	4d.
4 in.	1/3½	1/2½	5½d.
4½ in.	1/4½	1/4½	6½d.
5 in.	1/7½	1/6½	7½d.

O.G. GUTTERS.

3 in.	1/6½	1/4	4½d.
3½ in.	1/8½	1/4	5½d.
4 in.	1/8½	1/4½	6½d.
4½ in.	1/9½	1/7½	7½d.
5 in.	2/3	1/10½	8½d.

RAIN WATER PIPES, &c.

Per yd. in 6 fts.	Pipe.	Bends, stock angles.	Branches. stock angles.
2 in.	1/9½	1/2½	1/9½
2½ in.	1/10½	1/4½	2/2
3 in.	2/4	1/8½	2/7½
3½ in.	2/9½	2/1	3/0½
4 in.	3/2½	2/6	3/7½

NETT PRICES.

Tonnage allowance—4-ton lots, 5 per cent.
2-ton lots, 2½ per cent.

L.C.C. COATED SOIL PIPES—London Prices, ex Stock.

	Pipe. s. d.	Bends, stock angle. s. d.	Branches. stock angles. s. d.
2 in. per yd. in 6 fts.	3 0¼	2 2	2 7½
2½ in. "	3 7½	2 5	3 3½
3 in. "	3 10½	2 7½	3 11
3½ in. "	3 11½	3 2½	4 6
4 in. "	4 3½	3 7½	5 2½

L.C.C. COATED DRAIN PIPES.—London Prices, ex Stock.

	Pipe. s. d.	Bends, stock angles. s. d.	Branches. stock angles. s. d.
3 in. per yd. in 9 ft. lengths	4 8	5 6	8 9
4 in. " 1 1 20	6 7	6 3	11 0
5 in. " 1 2 22	8 3	11 3	17 0
6 in. " 2 0 6	9 9	13 0	21 3

Gaskin for jointing 65/- per cwt.

* The information given on this page has been specially compiled for THE BUILDER, and is copyright. The aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the highest or lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information. Prices are subject to 2½ per cent. cash discount.

PRICES CURRENT OF MATERIALS—(*contd.*)

	Per ton. £ s. d.		London. £ s. d.
IRON—			
Common Bars	12 15 0		13 15 0
Staffordshire Crown Bars—			
Good merchant quality	14 10 0	to	16 0 0
Staffordshire Marked Bars	18 0 0		19 0 0
Mild Steel Bars	12 18 0		13 18 0
Steel Bars, Ferro-Concrete quality, basic price	14 8 0		15 8 0
Hoop iron, basic prices	14 8 0		15 8 0
„ Galvanised	24 8 0		26 8 0
IRON—	Per ton in London.		
Soft Steel Sheets, Black—	£ s. d.		£ s. d.
Ordinary sizes, to 20 g.	16 5 0		17 5 0
„ „ 24 g.	17 5 0		18 5 0
„ „ 26 g.	18 5 0		19 5 0
Sheets, Flat, Best Soft Steel, C. R. and C.A. quality—			
Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 22 g. and 24 g.	17 10 0		18 10 0
Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 26 g.	19 10 0		20 10 0
No. 1 quality £4 per ton extra.			
Flat and Galvanised Corrugated Sheets—			
Ordinary sizes 6 ft. to 9 ft. to 20 g.	18 5 0		20 5 0
Ordinary sizes, 6 ft. to 9 ft. to 22 g. and 24 g.	18 15 0		22 5 0
Ordinary sizes, 6 ft. to 9 ft. to 26 g.	20 15 0		22 15 0
Sheets, Gavanised, Flat, Best quality—			
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. to 20 g. and thicker	19 5 0		22 5 0
Best Soft Steel Sheets, 22 g. and 24 g.	20 5 0		21 15 0
Best Soft Steel Sheets, 26 g.	21 15 0		22 15 0
Cut Nails, 3 in. to 6 in.	19 0 0		21 0 0
(Under 3 in. usual trade extras.)			

METAL WINDOWS.—Standard sizes, suitable for complete houses, including all fittings, painting two coats and delivery to job, average price about 1s. 4d. to 1s. 7d. per foot super.

COPPER.

		s. d.
Seamless Copper tubes (basis)	per lb.	1 1
Strong sheet	„	1 3
Thin	„	1 4
Copper nails	„	1 3
Copper wire	„	1 3

PLUMBERS' BRASS WORK.

Delivered in London.
Stamped by Met. Water Board.

CRUTCH HEAD SCREW DOWN BIB COCKS FOR IRON. EASY CLEAN.

½ in.	¾ in.
29/-	45/- per doz.

CHROMIUM PLATED TOILET SCREW DOWN BIB COCKS FOR IRON. EASY CLEAN.

½ in.	¾ in.
40/-	59/- per doz.

SCREW DOWN STOP COCKS FOR IRON.

¼ in.	⅜ in.	1 in.	1¼ in.	1½ in.	2 in.
31/-	44/6	75/-	175/-	250/-	396/- per doz.

SCREW DOWN STOP COCKS WITH TWO UNIONS FOR LEAD.

¼ in.	⅜ in.	1 in.	1¼ in.	1½ in.	2 in.
42/6	65/-	102/-	195/-	210/-	510/- per doz.

DOUBLE NUT BOILER SCREWS.

¼ in.	⅜ in.	1 in.	1¼ in.	1½ in.	2 in.
7/6	9/-	14/-	24/-	37/6	54/- per doz.

HEAVY CROYDON BALL VALVES.

¼ in.	⅜ in.	1 in.	1¼ in.	1½ in.
33/6	55/6	85/-	165/-	237/- per doz.

CAPS AND SCREWS.

1¼ in.	1½ in.	2 in.	3 in.	3½ in.	4 in.
9/-	11/-	16/6	29/-	42/-	45/- per doz.

BRASS FERRULES OF SLEEVES.

1¼ in.	2 in.	3 in.	3½ in.	4 in.
9/6	11/6	20/6	26/-	37/- per doz.

DRAWN LEAD TRAPS WITH BRASS CLEANING SCREWS.

	1¼ in.	1½ in.	2 in.	3 in.
8 lb. Lead P...	17/6	23/-	32/6	66/6 per doz.
8 lb. Lead S...	21/6	27/6	39/6	73/- per doz.

SOLDER.—Plumbers', 1/2, Tinmen's, 1/4, Blowpipe, 1/6 per lb.

PAINTS, &c.

		£ s. d.
Raw Linseed Oil, in drums	per gallon	0 4 3
Boiled „ „ in drums	„	0 4 6
Turpentine, in drums (10 gals.)	„	0 6 0
Genuine Ground English White Lead, per ton (In not less than 5-cwt. casks.)		59 10 0
Extra for 1-cwt. kegs over 5-cwt. casks is 2/9 cwt.		
GENUINE WHITE LEAD PAINT. "Father Thames," "Nine Elms," "Park," "Supremus," "St. Paul's," "Morganswyte," "Polacco," "J" Brand, and other best brands (in 14-lb. tins) not less than 5-cwt. lots per ton delivered		£ s. d. 79 0 0
Red Lead, Dry (packages extra)	per ton	52 0 0
Best Linseed Oil Putty	per cwt.	0 15 0
Size. XD quality	fkn.	0 3 6

Turpentine substitute can be obtained and prices vary according to the quality from 2/9 gallon upwards.

VARNISHES, &c.

		Per gallon.
Oak Varnish	Outside	0 14 0
Fine do.	„	0 16 0
Fine Copal	„	0 18 0
Pale Copal	„	1 0 0
Pale Opal Carriage	„	1 4 0
Best do.	„	1 12 0
Floor Varnish	Inside	0 18 0
Fine Pale Paper	„	0 18 0
Fine Copal Cabinet	„	1 2 0
Fine Copal Flatting	„	1 0 0
Hard Drying Oak	„	0 18 0
Fine Hard Drying Oak	„	0 19 6
Fine Copal Varnish	Inside	1 0 6
Pale do.	„	1 12 0
Best do.	„	1 2 6
Best Japan Gold Size		1 12 6
Best Black Japan		0 10 0
Oak and Mahogany Stain (water)		0 12 0
Brunswick Black		0 7 6
Berlin Black		0 14 0
Knotting (patent)		0 15 0
French and Brush Polish		0 12 0
Liquid Dryers in Terebene		0 9 0
Cuirass Black Enamel		0 7 0

GLASS.

ENGLISH SHEET GLASS IN CRATES OF STOCK SIZES.

ORDINARY GLAZING QUALITY AND SELECTED GLAZING QUALITY.

	per ft. super.		per ft. super.
18 oz. O.Q.	2½d.	32 oz. O.Q.	5½d.
18 „ S.Q.	2¾d.	32 „ S.Q.	6¼d.
24 „ O.Q.	3¼d.	Obscured Sheet, 18 oz.	3d.
24 „ S.Q.	3¾d.	„ „ 24 „	4¼d.
26 „ O.Q.	3¾d.	Fluted 21 „	9d.
26 „ S.Q.	4¼d.	Em'lld 18 oz., 5½d., 24oz.	6¾d.

Extra price according to size and substance for squares cut from stock.

ENGLISH ROLLED PLATE AND FIGURED CATHEDRAL, ETC., IN CUT SIZES.

	Per ft.
Rolled plate, ¼ in.	5½d.
Rough cast double rolled, ⅜ in.	6¼d.
Rough cast double rolled, ½ in.	6¾d.
Figured rolled, etc., white	6½d.
Figured rolled, etc., tinted	9½d.
Rolled Sheet	6d.
White rolled cathedral	8d.
Tinted rolled cathedral	8½d.

Rolled plate is the same price as rough cast double rolled.

	Per ft. s. d.
Reeded, Broad Reeded, Cross Reeded and Chevron Reeded, ¼ in. thick	0 10½
Wire Rolled, ¼ in. thick	0 9½
Wired Cast, ¼ in. thick	0 9½
"Calores" Sheet, 21 oz.	2 6
„ „ 32 oz.	4 0
„ Cast, ¼ in. thick	0 10
„ „ ⅛ in. thick	1 0
„ „ ⅜ in. thick	1 2
"VITA" GLASS.	s. d.
Clearsheet—not exceeding 1 foot	1 0
„ „ 2 feet	1 3
„ over 2 feet	1 9
Polished plate not exceeding 1 foot	1 6
„ 2 feet	3 0
Cathedral—not exceeding 1 foot	1 0
larger size	1 6
Horticultural Sheet and Cathedral "Vita" Glass Sizes up to 24 inches by 18 inches or not exceeding 3 feet	1 0
3/16 in. Wired Georgian Design. Sizes up to 96 inches long by up to 24 inches wide	2 6

LEAD, &c.

(Delivered in London.)	Per ton. £ s. d.
LEAD.—Sheet, English, 4 lb. and up	34 10 0
Pipe in coils	35 0 0
Soil pipe	39 10 0
Compo pipe	41 5 0

NOTE.—Country delivery, 20/- per ton extra, lots under 3 cwt. 4/- per cwt. extra and over 3 cwt. and under 5 cwt., 2/6 per cwt. extra. Cut to sizes, 4/- per cwt. extra.

Old lead, ex London area, at Mills, per ton	£21 10 0

BUILDING TRADE WAGES IN SCOTLAND

Following are grade rates authorised by the Scottish N.J.C. from December 1. Every endeavour is made to ensure accuracy, but we cannot be responsible for errors that may occur.

Grade Classification	A	A¹	A²	A³	B	B¹
Craftsmen	1/8½	1/8	1/7½	1/7	1/6½	1/6
Labourers	1/3½	1/3¼	1/2¾	1/2½	1/2	1/1½

Aberdeen	A	Dumfriesshire	A³	Inverness	*	Perthshire	A³
Ayrshire	A	Dundee	A	Inverurie	A²	Peterhead	A²
Banff	B	Dunoon	A	Kincardineshire	A³	Renfrewshire	A
Berwickshire	A³	East Fife	A	Kinross-shire	A	Rothesay	A
Bridge of Allan	A	East Lothian	A	Lanarkshire	A	Roxburghshire	A²
Broughty Ferry	A	Edinburgh	A	Midlothian	A	St. Andrews	A
Clackmannanshire	A	Fifeshire	A	Monifieth	A	Selkirkshire	A²
Doune	A	Forfarshire	A³	Moray and Nairn	B	Stewartry	A²
Dunblane	A	Glasgow	A	Newport	A	Stirlingshire	A
Dumbartonshire	A	Greenock	A	Peeblesshire	A²	Stornoway	A²
Dumfries	A²	Hamilton	A	Perth	A	Tayport	A
						West Lothian	A

*This town has its own rates: Masons, 1/6½; Carpenters, 1/6½; Slaters, 1/6½; Plumbers, 1/7; Plasterers, 1/7½, but 1/8½ is paid owing to the scarcity at present; Painters, 1/6½ and Labourers, 1/2.

The information given in this table is copyright. Rates of wages in England and Wales are given on page 85

THE SCOTTISH BUILDER

NEW BUILDINGS

AYR.—PREMISES.—Plans proposed by the architects of the Scottish Stamping and Engineering Co., Ltd., for boiler-houses, chimney-stack, etc., at the Neptune-works, West Sanquhar-rd. Cost £3,000.

CAMBUSLANG.—HOUSES.—Mr. William Brown, F.R.I.B.A., Clydesdale-street, Hamilton West, is the architect for 28 houses, etc.

CAMPBELTOWN. — RECONSTRUCTION. — Messrs. Bloch Bros., Campbeltown, have purchased the Glengyle Distillery, and they are to carry out a reconstruction of the building.

DUNDEE. — BUILDINGS. — The following plans have been submitted to the Works Committee: Dennison-road—garage for Moxham Partners, Ltd. (architects, Thoms and Wilkie, 21, South Tay-street); Fisher-street—houses for the Royal National Lifeboat Institution (architects, Maclaren, Soutar and Salmond, 15, South Tay-street).

GROSSFORD.—HOUSES.—Plans for new houses prepared by Mr. William Brown, Lanarkshire County Housing Architect, Clydesdale-street, Hamilton.

PAISLEY. — CHURCH. — Messrs. Abercrombie and Maitland, County-square, Paisley, are the architects for the new church on the Ferguslie estate, for the Church of Scotland Authorities.

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Revised throughout and greatly enlarged, superseding all previous issues.

HOW TO ESTIMATE
FOR EVERY CLASS OF BUILDING WORK
By J. T. REA.

Containing 730 pages with over 600 illustrations.
Large 8vo. Cloth gilt. Price 16/- net. (By post 16/9).

The 6th edition of this unique work represents, in fact, quite a new undertaking, brought up-to-date in every way, including a large amount of original memoranda, complete revision of prices, examples of analysis, and fresh details of costing, involving many thousands of figures, hundreds of calculations, and immense labour and research. Being self-contained, it avoids the weary hunt in other books for the vital, detailed knowledge which is usually hard, if not often impossible to find.

B. T. BATSFORD, LTD.
Architectural Publishers,
15, North Audley Street, London, W.1.

INSTITUTE OF PLUMBERS AND DOMESTIC ENGINEERS

We have received particulars of a new professional organisation which has been formed under the above title. Membership is open to qualified plumbers, domestic, ventilating, heating and sanitary engineers, naval architects, architects, engineers, and surveyors. The President is Mr. H. E. Rudd, F.F.A.S., F.I.A.S., A.R.San.I., etc. Full particulars of membership may be obtained from the General Secretary, 6, Finsbury-square, E.C.2 (temporary address, 37, Poulters-lane, Worthing, Sussex).

WATERPIPES AND FROST

In connection with the paper on "The Avoidance of Frost Bursting in Water Pipes," by Dr. J. McKeown, M.Sc., D.Ph., A.M.I.Mech.E., given in our issue for December 15, we have received a letter from Glass Fibres, Ltd., from which we take the following extracts:—

"Although the investigations described were carried out primarily on aspects of the subject of special interest to the non-ferrous metal industries, the general findings are of importance to all architects and builders.

"As must be expected in a paper dealing primarily with properties of the pipe materials in relation to this problem, only a brief reference is made to the question of pipe insulation as a means of preventing frost bursting, but it is of importance to notice that the general conclusion (see last paragraph) drawn, is that 'the only completely effective method of avoiding frost-bursting is to prevent the formation of ice in water-pipes.' This clearly can only be achieved either by heating the air round the pipe-runs or by suitably insulating the pipes. Whilst we agree with the statement earlier in the paper that 'there is room for a thorough investigation of the relative efficiencies of different types of wrapping for this purpose,' we would like to make it clear that suitable materials and data concerning them are available to enable adequate frost-protection by lagging to be provided when the location and working conditions are known; it is most regrettable that in so many new schemes, no proper consideration is given to the protection of water-pipes from frost. There seems, in fact, to be a general belief that such protection is an unnecessary luxury, involving excessive expense. Actually, in many cases, if a pipe system is carefully thought out in advance, little or no extra expense need be involved. Even where some lagging has to be included, the cost of this is insignificant in comparison with the damage and inconvenience which can be occasioned by even a small burst.

"In the same paragraph from which we have quoted above, it is implied that all lagging used for heat conservation contains initial moisture and needs drying out by the heat from the pipe before becoming effective as an insulation. We would like to be allowed to point out that this applies only to so-called plastic forms of insulation. Other forms of insulation, such as glass silk, are available which can be applied to a cold pipe and are immediately in condition to operate at maximum efficiency. As a matter of interest, we may mention that glass silk is being employed very widely at the present time on Government heating installations, partly on account of its very high efficiency, but also because it can be applied very quickly to a *cold* pipe. This enables lagging work to keep pace with pipe erection.

"An important point of difference between the problem of frost-protection by lagging and the use of lagging for hot-pipe insulation is not mentioned in the paper. Hot-pipe insulation usually serves to keep a steady heat loss from the pipe down to a predetermined value. With cold-pipe lagging for frost protection (since one must, for safety, usually assume still-water conditions) it is a question of providing such a degree of insulation that under the assumed conditions the temperature of the water will not fall to freezing point within the duration of the frost. No matter what lagging is used, some heat will leak away from the water and, sooner or later, it will freeze, if the frost persists sufficiently long. The application of lagging or boxing-in delays the freezing. The period of frost duration to be assumed for any given insulation will depend upon location and other local conditions. It is clearly desirable, however, in all cases, to achieve maximum insulation efficiency compatible with space available or cost. The exceptionally high efficiency of glass silk in combination with its low cost and other advantage mentioned above, renders it eminently suitable for frost protection purposes. In addition, it is inorganic and will not harbour vermin."

TRADE NEWS

Change of Title.

Messrs. W. Gibbs & Sons, Ltd., announce that as from January 1 they will carry on business as Goddard & Gibbs, 11, Wellington-street, Woolwich, S.E.18 (telephone: Woolwich 1332). All goods and correspondence should be sent to the new address as from the above date.

Dean Bradley House, Westminster.

In connection with this building, which was illustrated in our last issue, it should have been stated that the sub-contractors for cast-stone were Ferro-Concrete (Shepperton), Ltd.

Hutting in Concrete.

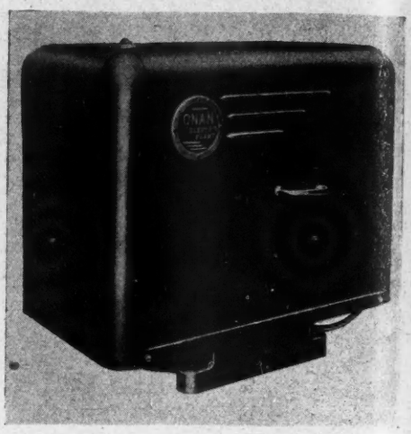
It should have been stated in our article on this subject, published last week, that the Rapid Floor Co., Ltd., of London-road, Twickenham, Middlesex, were responsible for the floor to one of the demonstration huts at Coombe Hill.

Recognition of Staff.

In recognition and appreciation of their efforts last year, Mr. F. R. Hipperson, managing director of Messrs. F. R. Hipperson and Son, Ltd., builders and public works contractors, of London and Norwich, has given the firm's head office staff a bonus of 5 per cent. of their salaries with the addition of one National Savings Certificate for each year of service. It is hoped that next year the bonus may be extended to the outside staff. Several members of the staff have more than 25 years' service to their credit.

A New Series of Generating Sets.

The war has accelerated the demand for electric generating plant for a variety of purposes, and it is satisfactory to know that many types of petrol and Diesel apparatus are now available. A firm that has specialised for some time past in plant of small size is the B.M.B. Engineering Company, of Britannia House, Ampton-street, London, W.C.1, to whose fifty or so standard models, practically all below an output of 1,500 watts, has recently been added (as a result of the firm's appointment as British concessionaires to Messrs. D. W. Onan and Sons, the American manufacturers) a range of air- and water-cooled power units with a choice of Diesel engines from 5 kw. upwards. Equal variety is shown in the matter of dynamos, for both D.C. and A.C. generators can be obtained having voltages and other characteristics to suit British requirements. Apart from sets calculated to meet a wide variety of ordinary needs, several outfits of special character are available. B.M.B. Engineering Co. can now offer more than a hundred different types of generating sets, a large number of which are available for immediate delivery and are open to inspection at the firm's showrooms.



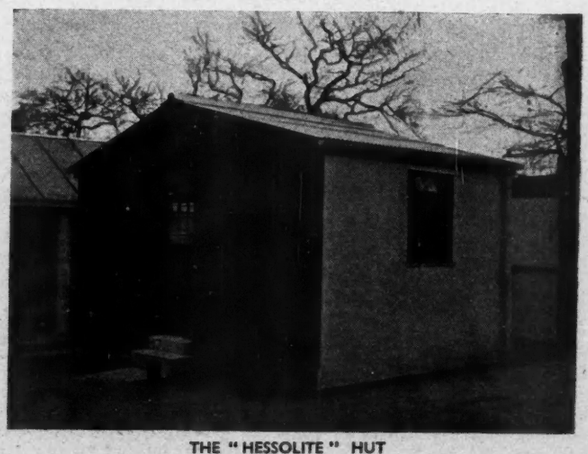
B.M.B. ENCLOSED GENERATOR

Hutting Without Timber.

Building construction by means of a skeleton framework and baseboards is one of the most economical methods. The materials are light, transport costs are low, erection is speedy and the use of highly skilled labour is unnecesary. But there are certain problems that must be overcome before the method can be considered perfectly satisfactory. In some cases brittleness causes splintering and cracking; an outer protective rendering of cement cannot be made to bind permanently; the materials may be neither fire- nor damp-proof; the insulating properties poor; and a further and even greater problem caused by present conditions is the difficulty of obtaining adequate supplies of the timber necessary for the framework. The "Hessolite" system is claimed to solve these problems. "Hessolite" patent baseboards consist of a corrugated waterproof backing supporting a "Hessolite" plaster body with a keyed Hessian surface on the face. This Hessian surface overlaps on two edges for bonding, obviating the use of scrim, and giving far greater strength. It will hold cement so firmly that spalling, crazing or cracking do not occur. An interior finish of plaster can be applied in one coat—the Hessian key will hold it. Because of the air-pockets held in the corrugations of the backing it has effective sound and thermal insulation; and it eliminates the use of wood.

"Hessolite" and steel construction is as follows: A framework of light steel units of the usual girder pattern is used. Within this framework are placed two baseboards back to back, and between them is inserted a sheet of corrugated iron. Plaster and cement renderings complete a wall or ceiling of considerable strength that is practically permanent.

Huts built on this system have been submitted, so we understand, to a test of nearly three years under the severest conditions, and have shown no sign of wear. Our illustration shows a hut erected at Coombe Hill. Further details are obtainable from Hessolite, Ltd., Cobbold-road, Willesden, N.W.10.



THE "HESSOLITE" HUT

TENDERS

The Editor welcomes authentic information for this feature from architects, surveyors or contractors. Items should reach 4, Catherine-street, Aldwych, W.C.2, not later than Wednesday morning.

Tenders for A.R.P. work will be found under "A.R.P. Schemes."

* Denotes *accepted.*
† Denotes *provisionally accepted.*
‡ Denotes *recommended for acceptance.*
§ Denotes *accepted subject to modification.*
¶ Denotes *accepted by H.M. Government departments.*

Anglesey.—Conversion of Memorial Hall, Amlwch, for use as secondary school for boys and girls, for E.C. J. Elfred Rees, Education Architect, Anglesey C.C., Glanaber, Llangefni : *Wm. Griffith and Son, Glyn Aeron, Benllech, Anglesey, £549.

Bedlington.—Store at Council depot, for U.D.C. : *Direct labour.

Blackpool.—Works, hut intended for certain whole-time volunteers engaged at Air Raid Precautions control room. Installation of lighting and heating, etc., *P. J. Frampton and Co., Ltd., Blackpool; painting and decorating, *C. Crabtree, Blackpool; installation of electric lighting in houses on Mather-st. housing estate, *J. W. Fielding and Co.

Carmarthen.—Heating of police depot, Chapel-st., for T.C. G. L. Ovens, B.E. and S. :
J. C. Hitt, Ltd., Bridgend, Glam. £104
H. E. Pritchard, Ltd., Kidderminster 91
*C. Chapman and Sons, Blue-st., Carmarthen 89

Coventry.—Electricity sub-station, Scots-la. housing estate, for T.C. :*H. Darbyshire, £363.

Devizes.—Interior decorating of 12 houses, Deramore-row, and 18 houses, Caen Hill-gdns., for T.C. A. W. Jakeway, B.S. :—

	Deramore-row.	Caen Hill-gdns.
F. Rendell and Sons, Ltd.	£48 10	£99 5
H. F. and J. C. Walter	41 17	94 0
*J. Wiltshire and Sons, Ltd., Devizes ...	39 10	87 5

Gateshead.—T.C. received M.H. consent to complete Shipcote baths (contractors, A. Pringle, Ltd., Cramer Dykes, Gateshead); and nurses' home at Teams Institution (contractors, Elliott Brothers, Otterburn-ter., Newcastle-on-Tyne). Plans by B.E.

Glasgow.—New premises in Cook-st., Tradeston, for Messrs. Barry, Ostler and Shepherd, Kirkcaldy. Quantity surveyors, John Danskin and Purdie, 243, West George-st. Thomson, Sandilands and MacLeod, architects, 246, West George-st. : Excavation, brick and mason, *Thaw and Campbell, Ltd., Dennistoun; joinery, carpentry and ironmongery, *Dick and Bunsin, Ltd., Pollokshields; glazing, *J. McPhee and Co., Ltd., Glasgow; slater and roughcaste, *J. McLaren and Co., Ltd., Govan; plumber and sanitary engineers, *W. Hardy and Sons, Ltd., Glasgow; plaster and lathing, *G. Davidson and Co., Glasgow.

Hereford.—Assembly hall, Hoarwithy-st., for Board of Management of Y.M.C.A. Hubert Thomas, A.R.I.B.A., architect, 36, Dale-st., Liverpool :—*Jewell and Sons, Hereford.

Inverness.—Water supply scheme for Campbeltown, for C.C. Geo. Gordon and Co., chartered civil engineers, 6, Queensgate, Inverness : Contractors, *Clark and Chapman, 49, Catherine-st., Aberdech; supply pumping and electrical plant, *Harland Engineering Co., Ltd., Alloa. (Estimated cost of the works, £4,625.)

Larne.—Drainage of 51 to 61, Circular-rd., for T.C. J. M. O'Brien, T.C. Jas. A. Caskey, S. : *H. McCurdy, 45, Point-st., Larne, £41.

Liskeard.—Wall and fence around site of refuse dump at Landgreek-ln., Polperro, for R.D.C. G. Rogers, S., Greenbank-rd. *A. Northcott and Son, Lansallos-st., Polperro, £85 12s. 6d.

Lleyn.—Five houses at Nevin for the R.D.C. J. E. Griffiths, architect, 1, Bank Place, Portmadoc :—*Jones and Williams, Nevin, Caernarvon, £1,662.

¶London (Air Ministry).—Contracts placed for the week ended Jan. 6 : Artificers' works, W. Tuach and Sons, Invergordon, and C. H. Hill and Sons, Ltd., Mansfield; air-conditioning plant and air-filtration and cooling plant, J. Jeffreys and Co., Ltd., London; air-filtration and ventilation plant, Air Control Installation, Ltd., Ruislip; underground cable schemes, T. Clarke and Co., Ltd., London, and Standard Telephones and Cables, Ltd., London; landing ground, Landing Ground Corporation, Ltd., Isleworth; steel water storage tank, Braithwaite and Co. (Engineers), Ltd., Newport (Mon.).

¶London (War Department).—Contracts placed during the fortnight ended January 2 :—Wiltshire, building work, D. F. Hillier, Ltd., 235, Bournemouth-rd., Parkstone (in place of item in December 15 issue); Hampshire, building work, Crosby and Co., Lion Works, West-st., Farnham; Hampshire, building work, W. H. Gaze and Sons, Ltd., 19-23, High-st., Kingston; East Anglia, hutting, H. C. Janes, Ltd., 189, Hightown-rd., Luton; Hertfordshire and Bedfordshire, hutting, Universal Housing Co., Ltd., Rickmansworth; Co. Down, building work, Stewart and Partners, Ltd., Ormeau-rd., Belfast; Lancashire, hutting, H. C. Janes, Ltd., 189, Hightown-rd., Luton; Co. Antrim, building work, D. J. Walls Bros., Saintfield-rd., Carryduff, Belfast; Hampshire, building work, J. B. Edwards and Co. (Whyteleafe), Ltd., Kenley House, Kenley; Northern Command, hutting, H. C. Janes, Ltd., Luton; Hampshire, building work, E. L. Moss, Ltd., 159, Brent-st., London, N.W.4; Surrey, miscellaneous, Hall, Beddall and Co., Ltd., Pitfield Wharf, Waterloo Bridge, London, S.E.1; Aldershot Command, building work, F. R. Hipperson and Sons, Ltd., Broad-st.-pl., London, E.C.2; Lancashire, hutting, Nicholson and Wright, Ltd., Cable-st., Lancaster; Linlithgowshire, hutting, D. Grant and Sons, St. James-pl., Edinburgh; Essex, building work, S. Cronin and Sons, 41, High-st., Brentwood; Kent, hutting, Kent and Sussex Contractors, Ltd., Ideal House, Carlton-rd., Erith; Kent, building work, F. Parham, Ltd., 1a, Eva-rd., Gillingham; Linlithgowshire, miscellaneous, Wm. Briggs and Sons, Ltd., East Camperdown-st., Dundee; Argyllshire, hutting, John McDonald (Contractors), Ltd., East Kilbride-rd., Rutherglen; Lancashire, hutting, G. Taylor and Co., Ltd., Ebor-st., Littleborough; Lancashire, constructional work, G. Moss and Sons, Ltd., Pennington Saw Mills, Leigh; Lancashire, building work, J. W. Lee, Ltd., Chorley; Glamorganshire, building work, J. A. Sparkes, Ltd., Cromwell-rd., Newport (Mon.); Derbyshire, hutting, E. Clarke and Sons, Snow Hill, Melton Mowbray; Hampshire, constructional work, Janes (Builders), Ltd., Buckingham Trading Estate, Slough; Hampshire, constructional work, A. E. Symes, Ltd., Albert Works, Carpenters-rd., Stratford, E.15; Wiltshire, building work, Edwin Bradley, Okus Quarries, Swindon; Hampshire, building work, Samuel Salter, Ltd., Yorke-st., Portsmouth; Southern Command, hutting, H. C. Janes, Ltd., Luton; Lancashire, building work, J. B. C. Hardman (Contractors), Ltd., Cuerden Mill, Bamber Bridge, Preston; Hampshire, miscellaneous works, J. Chuter, Lynchford-rd., Farnborough; Yorkshire, miscellaneous works, John Roxby Surtees, Ltd., Benfieldside, Co. Durham; Hampshire, building work, George Kemp and Co., Ltd., Stroud Elms-rd., Aldershot; Surrey, miscellaneous works, E. P. Gilkes and Sons, Ltd., 12, Temple-sq., Aylesbury; Kent, electrical installation, The Colston Electrical Co., Ltd., 39, Victoria-st., S.W.1; Glamorganshire, constructional work, Wm. T. Nicholls, Ltd., St. Paul's-rd., Gloucester; Yorkshire, miscellaneous work, Thos. Feather and Co., Ltd., Highfield-rd., Five-la. Ends, Bradford; Wiltshire, miscellaneous work, P. W. Wilkins and Son, Ltd., Brunswick-sq., Torquay; Co. Durham, painting work, Metcalfe and Sons, 1, Horsemarket, Darlington; Eastern Command, hutting, Wm. Sindall, Ltd., Gloucester-st., Cambridge. F. J. and A. A. Lowe, Writtle, Chelmsford, and H. P. E. Neave, Ltd., Catfield, Norfolk; Essex, hutting, W. J. Cearns, Ltd., Carpenters-rd., E.15.

Manchester.—Works for T.C. : Street and sewer works in Eastern Industrial area and Homewood-rd., Northenden, *Bituminous Surfacing Co., Ltd., Manchester. Structural work at schools : *J. H. Billings and Co., Ltd.; *J. Butterworth; *A. W. Egerton; *Ellis and Son; *T. W. Evans; *A. Fenton; *H. Fletcher; *H. Green and Son; *P. Hodkinson, Ltd.; *Lycett and Platt, Ltd.; *H. Mackenzie; *W. Major and Co. (Manchester), Ltd.; *H. Matthews and Sons (Builders), Ltd.; *Moseley Construction Co., Ltd.; *Moston Brick and Building Co., Ltd.; *C. H. Normanton and Son, Ltd.; *Northern Steel Scaffolds, Ltd.; *J. and J. Parish, Ltd.; *A. H. Prosser; *J. Riley and Sons; *B. Smith; *G. and D. Smith (Builders), Ltd.; *J. E. Stephenson; *J. N. Strafford, Ltd.; *Tinker and Young, Ltd.; and *Jas. H. Williams—all of Manchester; *R. Carlyle and Co., Ltd., of Old Trafford. Repairs to roof of nurses' block at Summerseat special school : *W. Sandiford, Summerseat. Heating, etc., services in connection with adaptation of Baguley sanatorium for war services : *G. N. Haden and Sons, Ltd., Manchester. Passenger and goods lifts in connection with change-over of supply : *Etchells, Congdon and Muir, Ltd., Manchester; *Waygood-Otis, Ltd., London. Smith and ironfounder's work for altering entrances at Hyde-rd. depot : *Spooner and Seth, Manchester (in lieu of previous tender).

Newcastle-under-Lyme.—Demolition of offices and store buildings, road improvement, Northwood-la., Clauton, for L. G. Tomlinson :—*D. Colclough, 5, Windmill-st., Tunstall, £22 10s.

Newport (Monmouthshire).—Foundations for factory buildings. C. S. Meik and Halcrow, engineers, 16, Victoria-st., Westminster, S.W.1 : *Peter Lind and Co., Ltd., Romney House, Tufton-st., Westminster, S.W.1 (£27,000 approximately).

Newquay.—Construction of Tor-rd., for U.D.C. W. Walters, A.M.I.Struct.E., M.Soc.E., E. and S. Quantities by E. and S. : *W. J. Glossop and Co., Ltd., Exeter.

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Oxford.—Formation of second magistrates' court adjoining present court, for T.C. : *Knowles and Son, Oxford, £255.

Robroyston.—New hospital, etc. Gardner and Gardner and McLean, architects, India-st., Bothwell-circus, Glasgow : Excavation, brick and mason, *R. Rogerson and Co., Ltd., Scotstoun.

Scotland.—Electric work at following evacuation camps : Middleton, Gorebridge; Belmont, Meigle; Glengonnar, Abington; Dounans Farm, Aberfoyle, for Scottish Special Housing Assn., Ltd. N. J. Campbell, S.S.C., Sec., 11, Drumsheugh-gdns., Edinburgh : *Miller and Stables, 21, Carnegie-st., Dunfermline : Middleton, £347 15s. 9½d., Belmont, £352 15s. 9½d.; Glengonnar, £362 15s. 9½d.; Aberfoyle, £362 15s. 9½d.

Sheffield.—Works for T.C. Construction of reactor bays and an annexe for housing special cylinders and automatic telephone switchboard at Neepsend Generating Station :—*Public Works Dept., £1,500; demolition of property in South-st., Hague-la., Lord-st., Stafford-st., Duke-st., etc. :—*J. Smith, Sheffield, £810.

Wallasey.—Foundations for proposed Benzole Recovery Plant at gas works, for T.C. : *James Griffiths and Son, Birkenhead, £247.

Wembley.—Chimney lining repairs, refuse disposal works, for T.C. : *Topping and Leggat.

Wilton.—Redecoration and repairs to 14 cottages, The Avenue, for T.C. T. David, B.S. : —*Messrs. Ushers, Salisbury, £202 17s. 6d.

NEW COMPANIES

THE particulars quoted below have been compiled by Messrs. Jordan and Sons, Ltd., Company Registration Agents, of 116 and 117, Chancery-lane, W.C.2, from the documents available at the Companies Registry.

J. KIDD AND SON (BUILDERS), LTD. (358084).—Registered December 7. 99-101, Crescent-lane, Clapham Park, S.W.4. Builders and contractors. Nominal capital : £10,000.

SQUARE GRIP REINFORCEMENT CO. (BRISTOL), LTD. (358068).—Registered December 6. Builders, contractors, manufacturers of and dealers in reinforced concrete and other material for road and building construction, etc. Nominal capital : £5,000. P. S. Henman, The Lawns, 17, Kingsdowne-road, Surbiton.

GARSUBIL, LTD. (358315.)—Registered December 18. 788-790, Finchley-road, Golders Green, N.W. Builders, contractors, engineers, etc. Nominal capital : £6,000.

PORTSMOUTH FIRECLAY CO., LTD. (358306).—Registered December 18. Cornholme Mills, Cornholme, Todmorden, Yorks. Bricks, tiles, fireclay, etc. Nominal capital : £900.

HEATON AND DENNIS, LTD. (358297.)—Registered December 18. Builders, contractors, etc. Nominal capital : £2,000. Director : W. F. Heaton, 8, Cumberland-road, Southport.

H. J. DYER AND SONS, LTD. (358267.)—Registered December 16. Builders and contractors, etc. Nominal capital : £1,000. H. H. Dyer, 18, Ashling-crescent, Bournemouth.

GEO. S. HALL, LTD. (358239.)—Registered December 15. High-street, Hanley, Stoke-on-Trent. Heating engineers. Nominal capital : £10,000.

BURNARD ENGINEERING CO., LTD. (358182.) Registered December 13. General engineers, etc. Nominal capital : £1,000. H. Burnard, 37, Worple-road, Staines.

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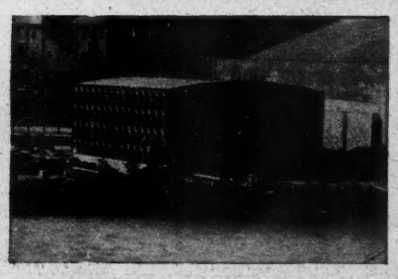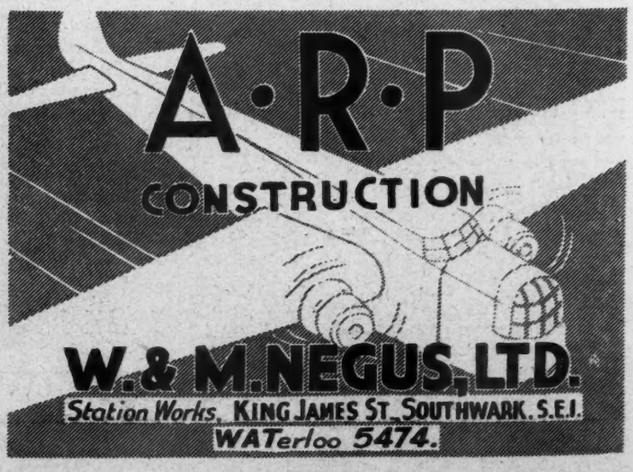
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